MARCH, 1940

THE CANADIAN HOSPITAL

· OFFICIAL JOURNAL · CANADIAN HOSPITAL COUNCIL ·

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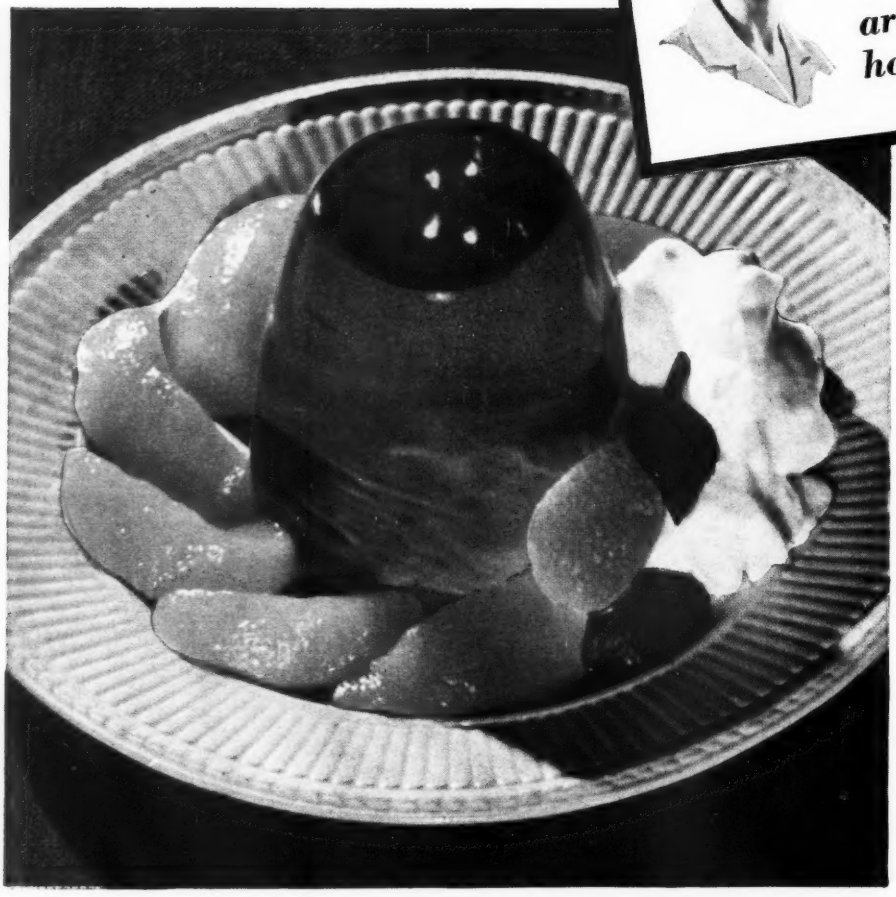

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HAVE YOU TRIED GIBBONS NEW "TRU-LEMON FILLING" FOR PIES, TARTS, LEMON CREAM DESSERTS?

Harvey Agnew, M.D.,
Editor

The CANADIAN HOSPITAL

March, 1940 Vol. 17 No. 3

The Hospital of Tomorrow

Applying New Ideas to Hospital Construction and Maintenance

By JAMES GOVAN, M.R.A.I.C.

ALL ordinary laws of supply and demand and economic controls over business expansion are now suspended, because of war conditions, and we are confronted with possible suggestions of a temporary prosperity based on the destruction of wealth. For these reasons it is all the more necessary that we should realize that the financing of hospital construction and administration is almost certain to be even more difficult in the future than it has been in the past.

If, then, we are going to be compelled to go in for slimming or tightening of the belt, what is the diet to be?

First, last and all the time, it requires careful study of what our actual Canadian and local requirements are and will be, with total disregard of what "the Joneses" in some other country, or province, or locality and under different social and economic conditions, may be doing.

True enough, we cannot ignore the experience of others, but *the deplorable tendency in Canada is to copy what is "being done" elsewhere, without any consideration being given as to its suitability for our own particular conditions.*

Address, Course in Hospital Administration, University of Toronto, November, 1939. Mr. Govan was Chairman for 1937-1939 of the Committee on Construction of the Canadian Hospital Council.

Canadian Hospital Requirements Index

Having prepared what we shall call our "Canadian hospital requirements index", what are some of the items which will call for more serious hard thinking than has been given to most of the hospital work in this country up to now?

The list would include among many others:

1. Construction of the exterior shell of buildings to provide for the tremendously *wide fluctuations in outdoor temperature* and, at the same time, to take advantage of the fact that the periods of extremely low or extremely high temperature, over most parts of occupied Canada, are of comparatively short duration.

2. Construction and design of roofs of buildings to take advantage of the fact that *snow* is one of the best insulating materials provided by nature. It can be left on roofs with perfect safety and be of very great assistance in preserving comfortable conditions indoors. However, in a badly designed and badly constructed roof, snow can be an unmitigated expensive nuisance and sometimes even dangerous.

3. Effect of *alternating wet weather and frost* on the exterior construction of buildings. Just as soon as we demand walls suited to our climatic conditions and provide adequate—not mere makeshift — insulation, then practically all of the methods of construction hitherto used in Canada become impracticable because of condensation and frost danger.

Future developments will probably be away from masonry construction and will embody hermetically sealed units whose surfaces should be absolutely impervious to water penetration.

4. Studies of angles of *winter and summer sunlight* at different latitudes and their influence on the orientation of buildings (i.e., placing buildings on a site) to take maximum advantage of valuable winter sunlight, and to exclude as much as possible of the overheating summer sunlight.

Demands for better insulated buildings will make the study of orientation for sunlight imperative, for the simple reason that, if sunheat is permitted to enter a building, via windows, during the day in summer, it does not go out again by the same windows to anything like the same extent at night. Consequently, the *insulated* building with such an exposure (east and west windows get most sunshine) will be insufferably hot in summer and will not have as much compensating advantage in winter as a building in which the southern exposure is the one utilized for most of the patients' accommodation.* *(Footnote next page)*

5. A combination study of items 3

and 4 will show the advantage of *overhanging roof projections* to protect exterior walls from rainfall during winter and to act as sun-awnings on south walls in summer, when the angle of sunlight on a south wall is so high that a horizontal roof projection will provide all the shading necessary for windows in the storey next to the roof.

It should be noted here that no type of *blind* on the inside of a window does anything to prevent sun heat from entering a room once it has passed through the glass; *it must be stopped before it reaches the outside of the glass.* This is just one other Canadian factor totally ignored when we copy blinds, etc., from other countries where conditions are totally different.

6. Speed and direction of *prevailing winter winds* and their effect on the heat load of the building, compared with that of the duration and depth of the lowest outdoor temperature dips. Here in Canada the latter is generally assumed to be the factor of greatest importance, but when construction methods are changed to take care of low temperature dips the wind factor will require more serious consideration than it generally receives now.

7. *Ratio of window area* to exposed wall and floor areas, and the *cooling effect of low temperature surfaces of windows and walls on patients.* This should be one of the most important factors in Canadian planning and construction, yet it receives almost no consideration in the average hospital job. A study of the ratio of window area to the heat absorbing capacity of the floors, walls, furniture and other features of each room is absolutely essential when advantage is taken of improved insulated construction to cut down the size of heating equipment provided.

This subject is almost beyond the scope of present day literature on the heating of buildings. Nevertheless our experience in several hospital and other buildings has shown that it will be considered a fundamental factor in the provisions made for controlling human comfort in the near future. It will be dealt with later in this paper under the broader reference to "Radiant Heating".

8. Provision of open-air balconies versus *rooms and wards which can be quickly opened up to simulate open air conditions.* Where cost per patient is limited, there are several factors to be considered when demands for open-air balconies are advanced:

(a) An open-air balcony requires a floor as weather-tight as an open roof because of rain, snow, etc. Such a floor, if suitable for wheeling beds, chairs and trucks on it, is extremely costly to lay and just as costly to maintain, because of the action of frost and because of expansion and contraction due to our extreme fluctuations of outdoor temperature;

(b) The balcony also requires closing in with fly screens unless it is so high up that it is beyond the insect nuisance level;

(c) If a balcony is provided outside patients' rooms and wards only, it shuts off winter sunlight for a longer period each year than the period for which it is useful as a summer balcony;

(d) To make such a balcony practicable for a reasonable number of months each year and justify its cost in the complete scheme of administration, it should be provided with windows that can be opened and closed quickly for the greater part of their area. This is no easy or inexpensive job, again because of our climatic vagaries—sudden thunder storms in summer, ice and snow in winter, metal rusting, expansion and contraction of materials used for frames and sashes. These and many other difficulties make the solution of this problem one of the most serious encountered in Canada, and one for which no experience in countries having different conditions is of any help to us here.

9. Available *fuel for heating.* Up to the present only three kinds of fuel for heating hospitals have been considered in Canada: i.e., coal, oil and wood.

Electric power is used to some extent for sterilizing and heating water. Some natural gas may be used in a few favoured localities, but if so, only to a very limited extent.

With demands being made for the development of St. Lawrence power, the prospect opens up in the central eastern part of Canada for the utilization of *electricity* in buildings specially designed and constructed to make its use economically feasible.

To indicate that such a possibility is not merely a whimsical dream, it is only necessary to state that there are several thousand examples of buildings heated with electricity in Great Britain, where no effort has been made to construct the buildings with walls, roofs and windows, having anything like as low a rate of heat transmission as we have found quite practicable and economical here in Canada.

Two factors are involved, *radiant heat* and *insulation.* We shall first consider the principles in radiant heating.

Radiant or Panel Heating

In the first place we must realize that the human body is a heat producing machine generating much more heat than it requires for action, thought or growth. The surplus heat, however, must be given off according to the physiological requirements of the body. To quote the American Society of Heating and Ventilating Engineers' Guide:

> "Heating for health and comfort is generally understood to mean that heat must be supplied in order to control the rate of heat loss from the human body so that the physiological reactions are conducive to a feeling of comfort."

The usual method of heating in Canada and the United States is called *convection heating.*

Again quoting from the Guide: "In convection heating, it is generally the function of the heating medium to transfer the heat to the air and thence to the occupant of the room, while the

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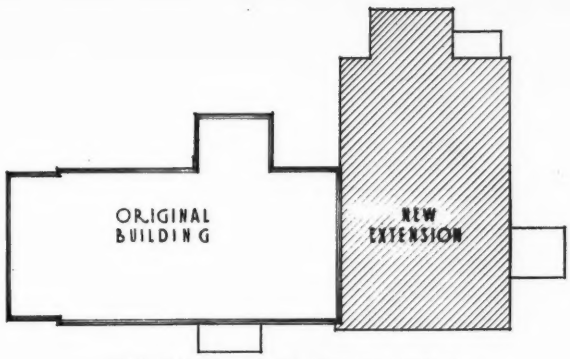
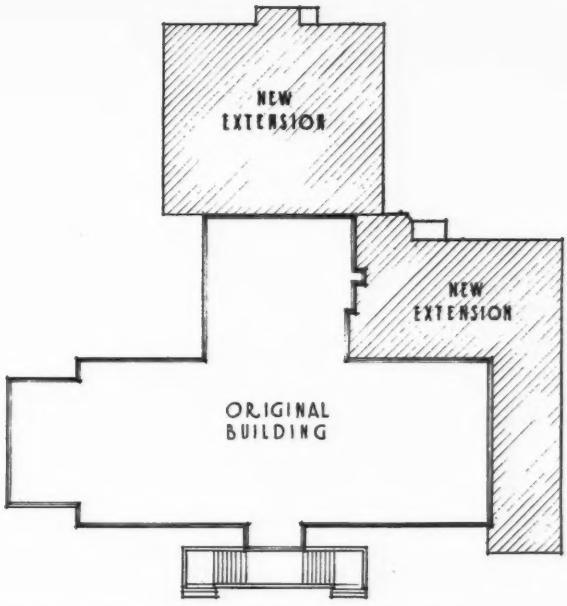
*The following confirmation of what I have been advocating for twenty-seven years regarding orientation of Hospital Buildings in Canada for sunlight is taken from the November issue of the American "Architectural Record":

"Computations based on ten-year records of the New York Meteorological Observatory demonstrate that at the summer solstice, east and west walls received, on perfectly clear days, nearly three times as much sun heat per day as walls facing south, and that at the winter solstice this situation was almost exactly reversed; south walls received almost three times as much heat as those facing east and west; and further, south walls received more heat per day in mid-winter than did walls facing in any other direction at any other season of the year. All this is obviously the result of the wide variations in the direction and altitude of the sun brought about by the mechanics of the solar system. Large windows, and rooms in which sunshine is important, should wherever possible be located on the south side of buildings. Nor can it be argued that for the sake of getting some sunshine into all rooms, rows of buildings should face east and west, since in this way it is merely assured that there will be plenty of bad sunshine in all, good sunshine in none."



Willett Hospital, Paris, Ontario

Cube: Original building, 95,000 cu. ft.
New extension, 94,000 cu. ft.
98.4% added to building.
10% increase in coal consumption for complete building.



Norfolk General Hospital, Simcoe, Ontario

Cube: Original building, 155,150 cu. ft.
New extension, 88,080 cu. ft.
57% added to building.
Less coal used in 1937 and 1938 than before extension.

primary object of radiant heating is to warm the surrounding surfaces without appreciably heating the air.

"The difference between convection heating and radiant heating is therefore partly physical and partly physiological. Reference to low temperature radiation is actually not heating at all, except in a secondary sense. Low temperature radiation is produced not to heat the individual in the room, but to reduce the net rate at which the body surface loses heat by radiation.

"Actually the feeling of heat and cold in an individual is not so much a measure of the rate at which body heat losses take place as compared with the heat generated within the body, as it is an indication that the sensation of the body is more susceptible to the manner in which heat is abstracted from the body. This principle is the basis upon which radiant heating is founded.

"The term *Radiant Heating* or, as it is better known in England, *Panel Warming,* now applies to methods of heating where, instead of heating the air in a room to a predetermined temperature, flat surfaces are placed in a room so that the average effective temperature of walls, ceiling, glass and floor surfaces exposed to the body is just sufficient to prevent the body losing too much heat by radiation."

Explanatory Questions and Answers

"Why is heat loss from the body by radiation important and what is the approximate relation for heat losses?"

"Heat losses from the body when in a sedentary position are approximately as follows:

radiation 49 per cent, convection 23 per cent, evaporation 15 per cent, respiration 11 per cent and miscellaneous 2 per cent. Actually it depends upon age, environment and other conditions."

"When and why does the human body feel cold?"

The body feels cold not only when it loses heat at a greater rate than it can generate it, but also when heat is abstracted from the body disproportionately. Since the human body generates more heat than is necessary, it is only necessary to provide conditions that will regulate the correct ratio of losses. The provision of suitable radiant heating surfaces is one way to establish these conditions."

"What kind of heating surfaces are in general use?"

"The heating units may have flat iron surfaces, heated with steam or hot water and placed in side walls or under windows, or they may be supported on the ceiling and suitably decorated and connected as ordinary steam or hot water radiators. Hot water pipes may be embedded in the floor, walls or ceiling, and when in the floors they may be covered with concrete and wood blocks or other suitable material; the finish of the surface being more important than the composition of the material.

"When in the ceiling or walls, they may be covered with plaster to harmonize with the rest of the room.

"Electric radiant heaters are made by embedding resistance elements in porcelain, or electric conductors may be woven into thick paper and fastened to the walls and ceilings; also electric wires may be woven with tapestry to form portable screens for local heating."

"What surface temperatures are generally used?"

"Where hot water pipes are embedded in plaster, the surface temperature varies from 90 to 130 F. Where flat iron plates are used, these may vary from 140 to 220 F. With electric resistances embedded in porcelain the surface temperature may vary from 200 to 500 F. High surface temperatures are not recommended."

"What generally is the air temperature necessary to give equal com-

Toronto Western Hospital

Cube: Original buildings, 1,813,000 cu. ft.
New buildings 1,880,000 cu. ft.

New private pavilion in centre, new top floor on former main building and new interns' building (not shown) added over 100% to volume heated.

Heating cost (allowing for difference in price of fuel) actually $600 *less* than formerly.

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fort effect for sedentary conditions?"

"With radiant heating 64 to 66 F. and with convection heating 70 to 72 F."

(While these figures have been quoted from the A.S.H.V.E. Guide, one is inclined to think that, with the different construction methods we have been using in Canada, the air temperature in such a building with radiant heating might be lower than from 64 to 66 F.)

"Why is there a saving in fuel consumption with radiant heating?"

"A saving is effected because the differential between inside and outside temperature is much less for radiant heating. Less ventilating air is necessary and this can be supplied at a much lower temperature."

"What natural evidence have we that air temperature alone is no criterion of comfort and that radiant heat affects the body more quickly?"

"When standing in the sunshine on a cool spring day, a person feels perfectly comfortable, but when a cloud passes over the sun, he instantly feels much cooler as the shadow reaches him. A shielded thermometer recording the temperature of the air shows no reduction in air temperature in so short a period, so that the person actually feels a sensation of cold which an ordinary thermometer cannot register. This shows that light and heat rays are shut off simultaneously and travel at the same speed; it also proves that radiant rays affect the comfort of the body quicker than air temperature does."

Opinions on Radiant Heating

The above quotations on the need for controlling the rate of body cooling are endorsed by Prof. C. A. Mills, Director of Experimental Medicine, University of Cincinnati, in his recently published book "Medical Climatology", condensed in the December, 1939 issue of Science Digest. He stated:

"It has been estimated that in muscular labors of man, dog, and horse, only 17 to 33 per cent of the combustion energy appears as work accomplished. Even the ordinary non-condensing steam engine comes close to these lower efficiency limits, while Diesel engines achieve as high as 36 per cent efficiency and gasoline motors range around 15-17 per cent.

"There is therefore much waste heat to be gotten rid of by the functioning human body, necessitating an adequate cooling system much as is required for inanimate engines.

"A more delicately balanced cooling mechanism is needed by man, however, because of the severe disturbance of function that comes if the integral body temperature deviates far from the normal 98.6° F.

"It is this close linkage of heat and energy production that makes man (and other warm blooded animals) so sensitive to environmental factors affecting the case of dissipation of body heat."

Sir Leonard Hill of London, England, one of the world's greatest authorities on ventilation, has the following to say about radiant heating: "Radiant warmth is much more important in maintaining comfort than air temperature."

In the United States, Dr. E. Vernon Hill, one of the outstanding authorities on the effect of air conditions on comfort, health and disease, and a member of the Advisory Council of the American Society of Heating and Ventilating Engineers, speaking on this subject, concluded that "radiant heat is the key to air comfort".

Experience with the use of radiant heat in the United States shows that savings of about 25 per cent are being made as compared with the ordinary convection type of heating.

When we have digested some of the ideas back of radiant heating and radiant cooling to control the rate of body heat loss, and are told that it was introduced into England about 29 years ago, we begin to wonder why we in Canada have so slavishly followed the practice of our neighbour to the south of depending on raising or lowering the temperature of the air surrounding the body (or convection method) to control body heat loss.

The answer in this matter—and also to the question of swallowing without any analytical thought a lot of engineering propaganda for the sale of summer air cooling equipment—is that we are mostly copyists and not even discriminating copyists at that.

Windows

Even such an elementary study as the inside surface temperature of our windows in cold weather has been almost totally ignored—in Canada, of all places on earth!

At one time storm windows were common, but here again, subject to "The Joneses" influence in other countries, storm windows have gradually been discarded, and when sug-

gestions are made to owners that their equivalent in double or triple glazed sash be used the only consideration generally discussed is how much fuel will be saved.

The problem in hospitals of how the body heat loss of a patient located near a single glazed window can be controlled down to the same rate as that of another patient whose bed is much further from the window, when the air in the room is the same temperature all over, is forgotten just as are many other factors equally pertinent to body comfort and well being.

Low Fuel Cost with Proper Insulation

A report recently made available regarding one of our Canadian hospitals is as follows:

To an institution of just under two million cubic feet, additions totalling *more* than the volume of the original buildings were made.

The extra cost of all coal used last year over what was required for the year prior to starting the additions was only approximately $900. If we allow for the increased cost of coal (60 cents more per ton on 2,500 tons, or $1,500) the actual cost, despite adding nearly two million cubic feet of building was $600 less! This paradox was largely the result of thorough insulation.

To this example can be added data showing a reduction of 70% in the size of the heating plant provided in an Ontario building when compared with what would have been required had ordinary construction methods been followed.

Possibilities for Electric Heating

From these data dealing with British experience with electric radiant heating, United States savings in radiant hot water type heating, and our huge Canadian reductions in requirements when very much better types of insulated building are used than were used for any of the British or United States data referred to above, a very reasonable assumption is that we can expect to see electric power applied to the heating of buildings in Canada on a sound economic basis before many years have elapsed.

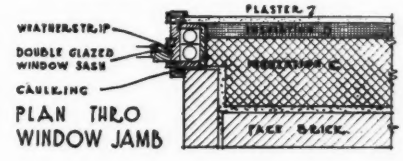
The 1938 Guide of the American Society of Heating and Ventilating Engineers has this to say about electric heating:

"Electrical heating is steadily assuming a more important place in heating, ventilating and air conditioning installations."

"In converting the chemical energy of fuels into heat by combustion, there is necessarily a considerable variation in thermal efficiency. This is not true, however, when converting electric power into heat, because 100 per cent of the energy applied in the resistor is always transformed into heat. In electrical heating practice the engineer need not be concerned about efficiencies of heat production, but rather about efficiencies of heat utilization."

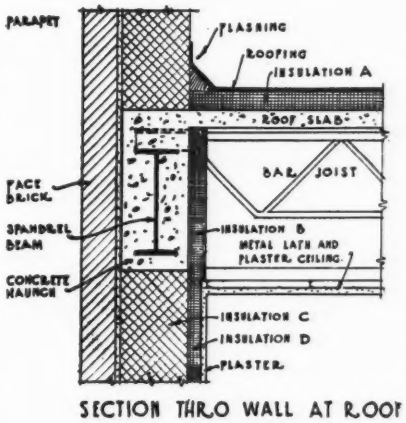
As has been shown in this paper unusually high efficiencies of heat utilization in Canadian hospital buildings have already been demonstrated. All that now remains to be done is to apply electric power to the production of heat in this type of construction.

Diagram of Proper Insulation



Note three requisites:

1. *Caulking—to prevent air infiltration around frame;*
2. *Weatherstripping—to prevent air infiltration between sash and frame;*
3. *Double (or triple) glazing—to reduce rate of heat transimssion through the window and, of equal importance, to raise the temperature of the inside surface of the glass near the room.*



Note insulation "B" connecting "D" with "A". This detail is frequently neglected, permitting "breathing" and passage of moisture to take place at this point.

Comfort and Safety in Operating Rooms

In hospital operating rooms all over the United States and Canada this whole matter of convection cooling versus radiant cooling is a most pressing question which must be answered if we are to have safety and comfort in these rooms.

To talk about air conditioning operating rooms and leave the control of the air conditioning apparatus to the surgeon is simply begging the whole question.

With the high temperature necessary to prevent too quick chilling of the patient when a rapid movement of air over an open wound is called for to prevent accumulation of explosive anaesthetic gas, and with the high humidity of about 56 per cent which also is demanded to prevent the explosion of such a gas, there is no possibility of either surgeons or nurses being comfortable and safe at the same time if convection methods of controlling the rate of body heat loss alone are used. The most reasonable and quite practical alternative is to follow Prof. Mills' suggestion and provide cooling wall panels to which excess body heat can radiate.

Lighting Possibilities

Straight thinking about our position in lighting efficiency in Canada must surely convince us that we are just about as far behind in lighting as we are in heating.

Fortunately, in recent years we are beginning to better things a little. The use of the new fluorescent type of bulb promises about 4 times as much light with the same power consumption as the average filament bulb now in use. Unfortunately, however, these fluorescent bulbs cannot be satisfactorily used in most of Southern Ontario because of the 25-cycle current provided.

However, even if these new bulbs are still too expensive for general hospital use and impracticable in many places, we can still do much to improve the use of the ordinary type of bulb by utilizing highly efficient reflectors combined with less conspicuous locations, so that the eye is not assaulted all the time with direct powerful light beams. Power con-

(Continued on page 82)

Fire Protection and Control

JOHN C. MACKENZIE, M.D., F.A.C.H.A.
General Superintendent, The Montreal General Hospital

IT is the usual belief that a hospital, because it is open twenty-four hours a day, is constantly patrolled as a consequence and, therefore, is fully protected against fire hazards. Therefore it is of more than passing interest to note that in one year (1935) there were some four hundred fires out of approximately seven thousand hospitals in the United States.

This quite unwarranted belief arises out of the readily assumed visualization of a hospital as being simply a building housing patient wards; in not a few instances this has created a policy on the part of certain Boards of Trustees of reducing to an almost ineffective minimum the fire protection accorded to their individual hospitals. That is an extremely limited vision of the whole problem on account of the many fire hazards that present themselves in such locations as x-ray storage, chemical and drug laboratories, carpenter shops, paint shops, furniture storage rooms, etc. In actual fact the elements for disastrous fires are present to a very much greater degree in hospitals than in practically any other type of public building. It is, therefore, of paramount importance that every step possible be taken to ensure that hospitals are fully and adequately protected against fire and its hazards.

Presented at the American Hospital Association Convention, Toronto, 1939.

Fire in a hospital is a much more dreadful and serious fire than in any industrial or office building and the chances of a fire occurring is many times greater because of those certain foci or loci, previously mentioned, which are typical to hospitals and which, in the majority of instances, are only occupied and in use about eight hours of the day.

The initial consideration is to have a plant which is fire resistant. The next point is to ensure that the fullest protection from a structural point of view is provided. For example, elevator shafts, ducts and pipe stacks act as flues if not properly shut off when a fire does occur. They also act as vents whereby smoke is conveyed from one location to another thus creating a smoke menace which can cause as much emotional disturbance to all exposed, especially to the critically ill and bed-ridden, as does an actual fire.

Some of the foci which should receive the greatest care in protection against fire are the x-ray film storage, the anaesthetic gas storage, and the chemical laboratories. As regards x-ray film storage the terrible disaster which took place when a certain well known clinic was beset by fire some years ago must always act as a very real and terrible warning. The principal lesson to be learned from that fire is that, even though the patients were ambulatory, twenty-four people died as a result of the start made in the film storage room from nitro-cellulose films. The building structurally consisted of a reinforced concrete floor, four stories with outside walls brick-faced. The partitions were hollow and in the centre of the building and extending through the three upper floors was a large open light well. Between the ceiling of the 4th floor and the roof was an attic space. Also between each pair of rooms there were vertical shafts for water and steam risers and they extended from the basement to the attic space. In the basement was housed the heating equipment, the electrical switchboard, drug supply rooms and a former coal room which had been converted into a store room for x-ray films. Those films were stored mostly on *wooden* shelves, but some were in steel filing cabinets. The fire arose from the decomposition of the nitro-cellulose films; how this took place is not definitely known, but the most widely accepted theory is that it was due to a light bulb of a 100 watt capacity being in close approximation to the films. Another theory is that the heat from an unprotected steam pipe was the cause. In any case, both of these

Illustration above is of fire at Saint Jean de Dieu hospital, Montreal. Photographs courtesy of Toronto Star and National Board of Fire Underwriters, New York.

potential causes were present and each, or both, could have started the decomposition of the films. This illustration presents a perfect picture of how easily a fire can start and how it can be conducted through shafts, ducts and open spaces with the most unpredictable and unprecedented disaster.

Pipe shafts running from basements to roofs should be closed; the administrator in his periodical rounds should make a point of inspecting to see that this is maintained. Not infrequently, due to workmen being called away to another job, the replacement of covers over pipe shafts is neglected. Hence, all maintenance personnel should be repeatedly instructed on the very great importance attached to replacing such shaft covers immediately work ceases for any reason whatsoever.

Responsibility for the institution and maintainance of preventive fire measures in a hospital devolves upon the administrator. One of his serious obligations is to make sure that the patients committed to the hospital are safeguarded against fire and smoke hazards as fully as is humanly and mechanically possible. The board of trustees have a very definite challenge and will be open to the gravest criticism if such protection for the inmates of the hospital is not established. Furthermore, it is a financial responsibility for the trustees for, if patients are burned or lose their lives, legal procedures are liable to ensue. Every dollar and cent spent, therefore, on adequate fire protection will redound to the credit and ease of mind of the trustees.

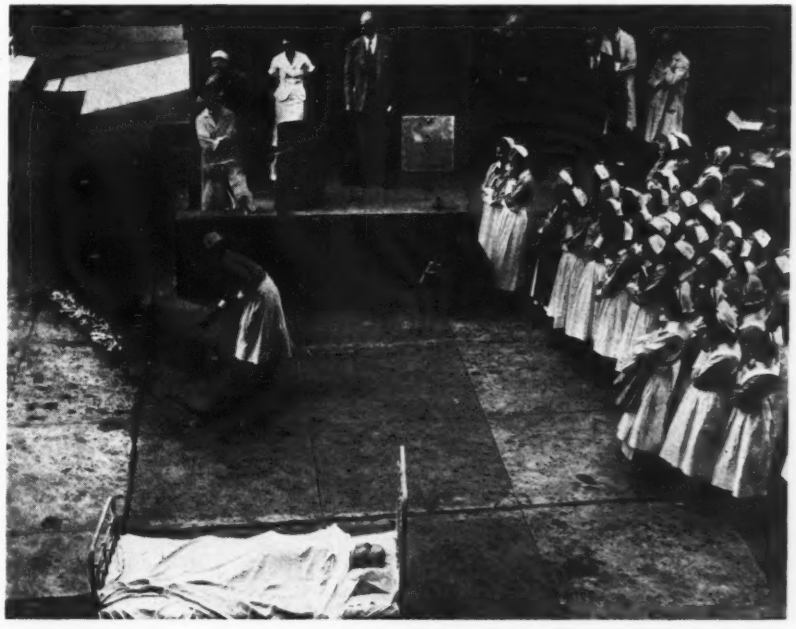
What then, broadly, are the means whereby this protection can be provided? A properly planned *fire resistant building*, with shafts of all descriptions fully protected, has already been mentioned. Elevator shafts, inasmuch as they are a medium for conducting smoke and fire from one floor to another, should be in *separate towers* built out from the building with their own lobby, separated from the main corridors by intervening tightly fitting doors.

In those places in which fires are most liable to occur, certain automatic extinguishing devices can be installed. The simple *bomb type* fire extinguisher, filled with carbon tetrachloride and sealed with a fusable plug or link which at a determined temperature fuses thereby freeing the extinguishing fluid, can be placed at certain open locations. This type of extinguisher will smother almost any type of fire including that from grease. There is, however, one disadvantage and that is, that in a *closed* space and under intense heat phosgine gas, a deadly poison, is created. This, of course, in itself creates a very real hazard and danger and so warning is given against the indiscriminate use of this type of extinguisher.

Another of the automatic types is the *sprinkler system*. Here again, when the temperature rises to a certain degree, the plug over the end of each sprinkler jet is melted and a spray of water is freed which covers a large area. The sprinkler heads are so arranged that the whole floor area over which they are installed is subjected, in times of fire, to a regular deluge of water. The sprinkler system is of undoubted value in such locations as the x-ray film storage, laboratories, paint or woodworking workshops, laundry and linen storage. The great advantage of the sprinkler system is that it quickly quenches any fire, the greatest harm done being that from water damage.

Of the portable type of fire extinguisher that most commonly in use is known as the *"acid and soda"* extinguisher. When the extinguisher is inverted, the hydrochloric acid is quickly brought into contact with the soda bicarbonate, resulting in the formation of carbon dioxide gas. This rapidly builds up a pressure which forces out the water content of the extinguisher. This type of extinguisher, therefore, is not a chemical extinguisher but is a straight water extinguisher. A chemical extinguisher of wide range and of extreme usefulness is that known as the *"foam"* type. This is especially useful in oil fires as it smothers the fire by preventing contact with the oxygen in the atmosphere. Also in this category is the *carbon-dioxide or "snow"* extinguisher. Both of these latter types of extinguishers have quite a long projectory, a feature of undoubted additional value. Some of the non-chemical extinguishers, such as the soda and acid type already described, have a pump attachment which increases the projectory of the jet of water.

The simplest form of protection, one to be by no means ignored, is the ordinary *water pail* or *fire bucket* placed at strategic points. It is well not to have these water pails filled to the top, but rather just partially filled, as they then become much more easily and efficaciously handled by nurses, female technicians, and by convalescent or partially convalescent patients. In the same way, fire buckets can be partially filled with sand; again the



A demonstration of how to fight fire.

Conditions such as shown in this institution workshop promote the rapid spread of fire. Here the inherent hazards of a highly combustible occupancy are added to by the construction seriously lacking in fire resistive features. Reasonable protection in this and similar instances can only be secured by automatic sprinklers.

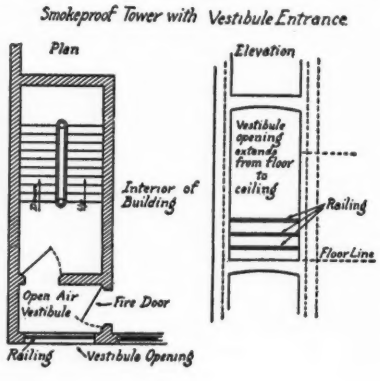
warning is sounded not to fill them to the extent that they become cumbersome and a burden to lift, thereby decreasing the flexibility of their use. It is far better to have two pails half-filled than one pail filled to the top.

The extinguishers so far described may be considered as the first line of defence. The second line of defence is the installation on each floor of one or more *pipe stands with hose* connected up ready for use. The most common type of pipe stand is that with the manually operated valve, though there is a type whereby the valve is automatically opened as the hose is unrolled. In practice, it would appear that the manual type of valve is easier to operate and certainly much easier to control.

In certain instances there are outside pipe stands in adidtion to the inside pipe stands. In this country precautions must be taken so that these pipe stands will be frost free at all times. This can be accomplished by the erection of a hut, well insulated around the pipe stand; the suggestion is made that in this hut there be stored fire axes, lanterns and gas masks. All of this fire fighting apparati must be inspected periodically.

Fire Alarms

When fire does break out, all concerned are anxious to have immediate warning so that the efficient forces that have been installed to control this menace may be put into operation. To do this efficiently, a certain number, if not all, of the hospital personnel must be instructed and trained in their duties. The local fire fighters are nurses, doctors, porters, orderlies and engineers. To make all of such readily conversant with their specific duties in the event of fire, frequent fire drills must be held at regular stated intervals. The warning for fire drills, or for the actual outbreak may be given by ringing a hand bell, an electric bell or a buzzer, but when such means are used it must be certain that their sound is heard throughout the whole establishment. This means of warning would be of little avail in a large institution, and so an internal electric fire alarm system is usually adopted. This works in exactly the same manner as the outside fire department alarms so that when a box is "pulled", there is set up a signal indicating the location of the fire, but ringing throughout the whole building. Despite the many reasonable objections that may be raised to the gong type of signal, it remains the best means of giving an alarm. It is not suggested that this gong type should be of the continuous ringing variety, but rather that of the telegraphic type employing the dot-and-dash signal. As for disturbance to patients in practice drills, all patients can be warned immediately before hand. Then again, the gong need not be of the strident nature, offending to the ears and a creator of emotional disturbance, but may be reduced in intensity yet giving a determined warning.



Regular fire drills should be carried out at least once a week, when a box is pulled at random. All concerned must be so instructed that they know the specific signal for each location throughout the hospital. When the signal of any location is sounded, those detailed for that location should proceed there immediately and assume their duties. All others not concerned with that particular location will stand by until the "all clear" signal is given.

Structural Safeguards

In the general lay-out of a hospital, certain items are worthy of consideration. For example, *doors* should open out so that they will not block main corridors and hallways; those giving egress from the building should open to the outside. All doors on exit stairways or fire towers should be provided with panic bolts, and should be regularly inspected to see that they will operate under the slightest pressure. Ground floor *windows* should be of a convenient height from the floor level and the ground level so that they provide easy exit in the case of an emergency. *Screens* over windows should be so constructed and installed that they can be readily opened, either by a simple push-out movement or by lifting up on runners. *Hallways* and all main thoroughfares should be kept clear of wheel chairs, stretchers, or any article of furniture; provision should be made in such hallways for alcoves

where wheel chairs or stretchers may be left when not in use. Long corridors may be automatically cut off and isolated at intervals in case of fire by means of fusable link *fire doors.* Such fire doors, as an evidence of their worth, will carry the underwriters' label. Mention has already been made that all stairways should be in fire towers isolated from the various floors of the building itself.

Where *ramps* must be used, they should not be constructed with too steep an incline and should be covered with a non-slip material with handrails on either side. For older buildings, where a speedy means of evacuating patients is a necessity, *tubular fire escapes* are the best means of evacuation. All fire exits of whatever type should be labelled by means of electric *exit lights.* Such lights will operate on a separate circuit from other lighting circuits and the signs should be illuminated continuously, day and night.

Many other means of providing adequate fire protection and control might be mentioned, but the above are presented as some of the main considerations. In addition, however, it is good practice to employ one or more watchmen whose rounds are checked during their tour of duty by means of a watchman's clock. The latter may be of the electrical variety registering and charting at a central location or registering simply on a chart on a clock carried by the watchman himself.

It is of particular importance, and is emphasized, that those locations, such as workshops, stores of all descriptions, laboratories, etc., which are only occupied for a portion of the twenty-four hours should be patrolled by a watchman, not only because they are only in use approximately eight hours out of the twenty-four but also because they themselves present the most likely loci for the outbreak of fire.

A long record of costly fires emphasizes the danger of using attics such as shown above, as places of storage. The attic shown is above hospital wards and not being under observation is a constant menace to life and property. Such conditions should not be permitted. Attic and similar spaces in hospitals of this type should be thoroughly sprinklered.

Conclusion

1. Install and provide adequate means for the combatting of fire, especially in laboratories, workshops and storage rooms.

2. Install an efficient and adequate fire alarm system so that warning may be given in the event of an outbreak of fire.

3. Hold regular fire drills so that those detailed for fire duty can carry out their duties efficiently.

4. Hold frequent, regular inspection of all fire fighting and fire prevention equipment, including warning signals of whatever type may be selected.

Mid-Year Hospital Conference

On February the 12th and 13th, the ninth annual Mid-Year Conference of the American Hospital Association was held in Chicago. This conference provides a mid-winter get together for officers and committee members of hospital associations and is part of a general conclave of bodies which permits those interested in the work of the medical associations, the medical colleges, the licensing bodies, intern and specialist training, nursing and other allied fields to have joint or separate meetings. At this time, also, the various councils and major committees of the American Hospital Association hold their meetings.

A number of Canadians were present at these sessions. The Canadian Hospital Council was represented by its president, Dr. George F. Stephens. The secretary was also present.

A luncheon of hospital association executives was held on February the 12th and was the largest February luncheon to date. Mr. Arnold Emch, assistant secretary of the American Hospital Association, presided and a number of important topics came up for discussion during the afternoon. The meeting adjourned at four o'clock to attend the dedication of the Asa Bacon library and reconvened in the evening when the representatives were guests of the American Hospital Association at dinner. On the following morning a general Round Table was held to discuss hospital care insurance and general matters relating to association developments.

Other sessions of interest to hospitals were those dealing with the development of residencies and certification in specialties, the meeting of the nursing committees and associations, those on the training of interns, the A.C.H.A. committee meetings and the sessions on hospital care insurance.

Why the Wide Variation in Food Requirements and Costs?

A Stimulating Study in Alberta

WHY should meal costs vary so widely in hospitals of comparative size, type of management and in the same general area? Why should food amounts vary so markedly? Why should the kitchen and dining room costs in a group of small municipal hospitals vary from 30 to 70 cents for the same period?

Such were the questions which last year bothered the supervisor of municipal hospitals for Alberta, Mr. W. A. Shoults of Edmonton. Accordingly he made a four weeks' study of the municipal hospitals in that province, getting complete weekly reports for four consecutive weeks (September) of their menus, quantities, qualities, costs and other data. Complete reports were received from sixteen hospitals and partial reports from eight more. The study revealed some interesting data.

Amazing Disparity

The tremendous difference in the types of food consumed in different hospitals is very apparent. For instance, one hospital used but 88 quarts of *milk* per 1000 meals, while another used 196 quarts! The average was 152 quarts. *Cream* consumption varied from 9.9. to 38.1 quarts, or four times as much, per 1000 meals.

Eggs showed a variation of from 11.8 dozen per 1000 meals to 35.8 dozen, there being four hospitals using 33 dozen or over. Why the 11.8 figure?

Canned vegetables, averaging $4.37 per 1000 meals, varied from $1.16 and $1.20 to $11.34. Here one would like to know if these figures were affected by home grown produce. Meat, averaging 91 pounds per 1000 meals, ranged from 51, 67 and 68, to 113, 115, 116 and 122 pounds. Some hospitals must serve the meat requirements of men engaged in hard manual labour.

The use of *fresh vegetables* could not be compared because, in most instances, the amounts reported were not expressed in weight.

Of particular interest was the figure on fruit. For *fresh fruit*, with an average of $7.00 per 1000 meals, the cost varied from $4.40 and $4.48 to $12.08, $12.18 and $12.26. The consumption of *canned fruit* varied from $2.12 to $9.61. Yet this was during the fresh fruit season, September! Moreover, most of the hospitals that were low in canned fruit were low also in fresh fruit. Of the 21 tabulated, there were four which were low in canned fruit and high in fresh fruit. One was high in both. Of course this figure might readily be influenced by the amount of fruit canned by the hospital itself, or by its local volunteer friends.

Tea, and *coffee* varied widely, as might be expected, the average per 1000 meals being 4.2 pounds of tea and 7.7 pounds of coffee.

Reasons for Cost Spread

Mr. Shoults attributes much of this spread to some or all of the following reasons:

(1) Waste. In many instances, menus are not planned to use leftovers.

(2) Paying excessive prices for supplies by
   (a) Purchasing very best quality when a cheaper grade would be quite satisfactory.
   (b) Purchasing staple supplies as required instead of in bulk at a substantial reduction.

(3) Serving more than is required.

(4) Serving unnecessary and costly foods.

(5) Lack of scientific direction, instruction and supervision.
   (a) Most smaller hospitals cannot afford a full-time dietitian.
   (b) In many instances, the Matron is not particularly interested in the operation of the kitchen department.
   (c) Usually, the previous experience of the cooks employed in smaller hospitals is limited to their work in restaurants, hotels, camps, etc.

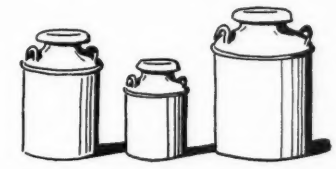
Comparison of Identical Hospitals

The following comparison of hospitals "B" and "F" is interesting:

	"B"	"F"
Patient days, 1938	11,131	11,178
Bed capacity	47	47
Average cost per patient day of operating kitchen and dining-room, 1933-37	61.2c	43.4c
Cost per meal for 1 month	12.7c	8.4c
Bread per 1000 meals	71 loaves	93 loaves
Milk per 1000 meals	185 qts.	143 qts.
Cream per 1000 meals	9.9 qts.	15.4 qts.
Eggs per 1000 meals	35.8 doz.	15 doz.
Tea per 1000 meals	3.8 lbs.	2.6 lbs.
Coffee per 1000 meals	6.1 lbs.	3.5 lbs.
Canned vegetables per 1000 meals	$11.34	$1.16
Meat, fish and poultry per 1000 meals	105 lbs.	74 lbs.
Fresh fruit per 1000 meals	$7.33	$4.67
Canned fruit per 1000 meals	$6.29	$2.63

We are informed that hospital "F" grows some of its own vegetables. Both hospitals are located in rich mixed farming districts in the southern half of the province. Since making this study, hospital "B" has reorganized its dietary service and is now using less canned vegetables and meat.

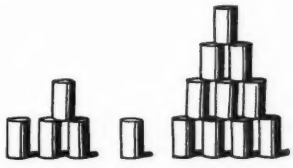
Comparison of Consumption per 1,000 Meals



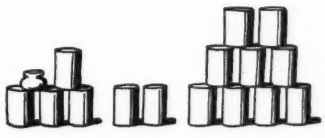
MILK:
Average ..... 152 quarts
Low ..... 88 "
High ..... 196 "

CREAM:
Low ..... 9.9 quarts
High ..... 38.1 "

EGGS:
Low ..... 11.8 dozen
High ..... 35.8 "



CANNED VEGETABLES:
Average $4.37
Low 1.16
High 11.34



CANNED FRUITS:
Average $4.82
Low 2.12
High 9.61

FRESH FRUITS:
Average $7.00
Low 4.40
High 12.26

MEATS:
Average ..... 91 pounds
Low ..... 51 "
High ..... 122 "

(d) Apparently, simple literature on cooking for hospitals is not available. Cooks interested in their work could do some private studying.

(e) Too frequently fully qualified dietitians, though well schooled technically, lack that indispensable requisite —practicality.

Recommendations

(1) That the matrons of our smaller hospitals give special attention to the supervision of the kitchen department.

(2) That groups of smaller hospitals engage a full-time travelling dietitian.

(3) That some literature in simple language be prepared on:

(a) Qualities and prices of kitchen supplies.

(b) Buying economically.

(c) Planning meals to the best advantage.

(d) Cooking for the hospital.

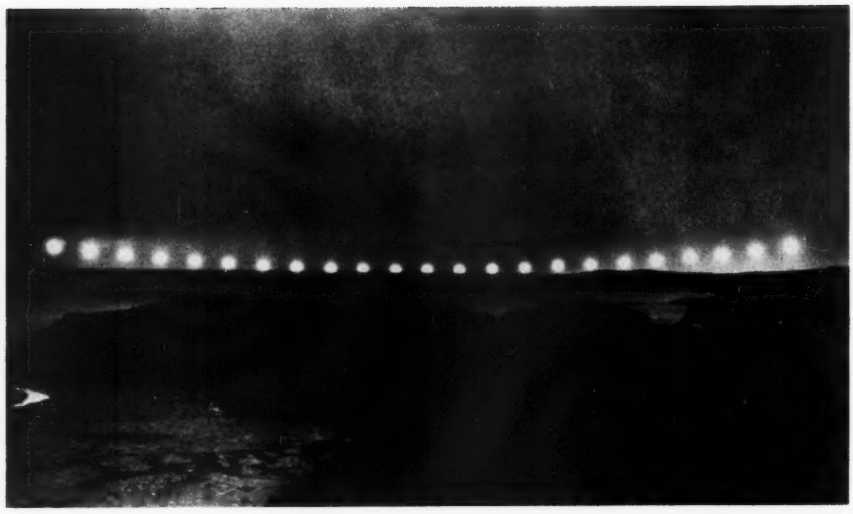
(e) The hospital tray, etc.

(4) That an extensive survey be made of representative smaller hospitals in Canada in order that we may ascertain the average quantities of staple foods required per patient day or per 1000 meals.

Note: In going over the menus submitted by the hospitals to the Supervisor of Municipal Hospitals, the Editor was struck by the scarcity of fresh fruit and fresh vegetables on so many of the diets. Few menus regularly showed orange juice or other fresh fruit for breakfast and only occasionally did one notice fresh fruit or salads throughout the day. There is no mention of the serving of wheat germ. The type of bread is not stated, but, as in most hospitals, it was probably made of the deficient white flour. So much of the food was cooked—stewed apricots, cooked vegetables, puddings, pie. While variety is essential, hospitals should give leadership in planning meals adequate in vitamins and other food requisites. Here the services of a qualified dietitian are of paramount importance, even, in the case of small hospitals, if only on a part-time basis.

Unusual Medical Staff Meeting

One of the most unusual medical staff conferences, which was, at the same time, a most unique form of memorial meeting, was the memorial session of the staff of the Montreal Neurological Institute on February the 14th, in memory of the late Lord Tweedsmuir. The speakers on this memorial meeting focussed their attention upon the scientific aspects of his last illness, and those who had been in charge of his care at the institute during the last few days explained to their colleagues the efforts to bring about a recovery. Dr. Wilder Penfield reviewed the procedures adopted to relieve pressure and referred to the fact that twice His Excellency showed evidence of regaining power in the paralysed muscles. After the third operation he was again beginning to show evidence of recovery when an embolism from an unsuspected source defeated all of the efforts made. Other speakers were Dr. William Cone, Dr. Jonathon Meakins and Reverend David Scott.



The Romance of Radium

R. FRASER ARMSTRONG, B.Sc.

BUT few persons have had the opportunity of seeing the element which is contained in the small gold, platinum or steel tubes by which radium finds medical application.

Radium is a lustrous white metal about half as heavy as silver. Purified as a chloride, it appears to be a dull white powder which could easily be mistaken for ordinary kitchen salt—but what a difference in its money value and magical behaviour! A pound of radium costs over twelve million dollars, and as recently as a few years ago was valued at over fifty million dollars! A pound of kitchen salt costs a few cents.

Radium cures by touch, and even without direct contact. Nothing appears to happen when it is brought close to a cancerous growth. But a few days later the growth begins to shrivel, and in time disappears, the disfigured parts becoming normal.

The unusual photograph above was taken by Mr. Gilbert LaBine from LaBine Point on Great Bear Lake, N. W. T., twenty-six miles from the Arctic circle. The picture was taken on June the 21st. Starting at 10.45 p.m., the camera shutter was opened every ten minutes until 1.15 a.m., thus presenting a glowing necklace of 23 suns.

Radium produces heat—a particle of it giving off a million times the heat energy produced by an equal weight of burning coal. It makes the air a conductor of invisible light and gives a fluorescent characteristic to a large number of bodies—by this characteristic the real diamond can be distinguished from the paste. It spontaneously produces a gaseous substance which can be caught in tiny containers, making what is known as "radon seeds"—these seeds have the same curative characteristics as the radium itself. Radium has the same light characteristics as the x-ray, the rays from radium will pierce objects which ordinary light will not penetrate and, like the x-ray, it can be used for obtaining pictures of the bones within the flesh.

No wonder science and industry extend their resources to produce relatively small quantities of the precious metal. Measured on a basis of quantity the yearly production of a few grams is only a trifle. But those who work with radium in units of one thousandth of a gram—the milligram—know that the small quantities produced bring benefit to thousands of sufferers.

All hospitals desire to have radium. Yet some have none at all and others must be satisfied with small quantities. In this province we are particularly fortunate because the Provincial Government supports cancer clinics at strategic points and provides these clinics with a supply of radium and radon seeds.

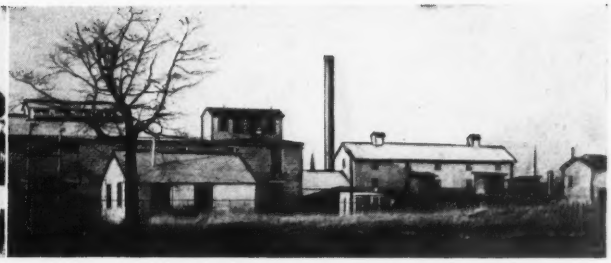
Fifty years ago no one knew that radium existed. It is, therefore, a modern discovery. Years ago science produced high tension electric current; later other scientists developed the vacuum tube. Using these two discoveries the x-ray was found and these three accomplishments of science led to the ultimate discovery of radium. It is an interesting story.

The Discovery of X-ray

Scientists had been experimenting by putting high tension current into a vacuum tube, and found that by doing so an intense fluorescence was produced on the walls of the tube. This was interesting, but in itself contributed no remarkable achievement. Roentgen was doing this. He was creating an intense fluorescence on the walls of the tube in the same way that others had done—and then he did something more, a simple act in itself to produce one of the outstanding scientific discoveries.

We do not know—perhaps Professor Roentgen himself did not know—what he was looking for on that eventful evening in November, 1895 when he discovered the x-ray. The fact, however, that he had

One of the aeroplanes used to transport supplies and ore.



The Port Hope refining plant.

screens painted with a luminous chemical and placed around the walls of the room, and that he attempted to shut off the intense glow in the vacuum tube indicated he was looking for something.

Roentgen was putting high tension current into a vacuum tube. He was creating an intense fluorescence on the walls of the tube in the same way that others had done. Then he did something more—a simple act in itself but sufficient to produce one of the outstanding scientific discoveries.

He knew that black cardboard would shut off all known forms of light. He was not surprised when he covered the vacuum tube with black cardboard that the glow was hidden. He was not disappointed at the resultant darkness, but one can venture the guess that he was strangely excited when he turned and saw the illumination upon the chemical screens on the distant wall. Here was a new ray which, invisible itself, had the power of piercing the black shield and providing a glow at a distant point.

Hurriedly he placed books, wood and other objects in the path of the new light, but it seemed to pass right through them. Then he placed his hand in front of the screen. The bones were opaque to this new ray, but the flesh was transparent and the darkened shadow showed the outline of the bones. *The x-ray was discovered.* The next step was to test the ray on a photographic plate and the science of radiology was born!

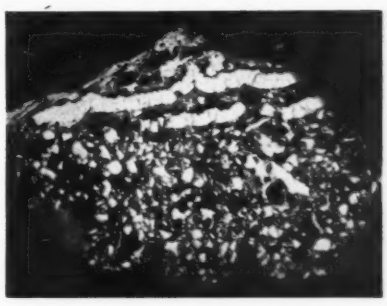
The Discovery of Radium

Another scientist, Becquerel, wrongly deduced that the new ray came entirely from the intense fluorescence. He thought that by subjecting compounds such as uranium to sunlight that he might intensify the fluorescence to a point where those compounds would produce the same new light. He found he was mistaken in this deduction but—by accident—he placed a piece of pitchblende on a photographic plate and obtained feeble shadows. He concluded, rightly this time, that there must be some unknown ingredient in the pitchblende which, if it could be extracted and used in concentrated form, might produce the same result Roentgen had obtained. And here the Curies enter the picture.

At the age of 24 Marie Sklodovska, a Polish girl, had enrolled as a student in the Faculty of Science at the celebrated Paris University, the Sorbonne. Her meagre savings necessitated a budget of but 3 francs a day to cover the rent of her garret room, meals, clothes, books and university fees.

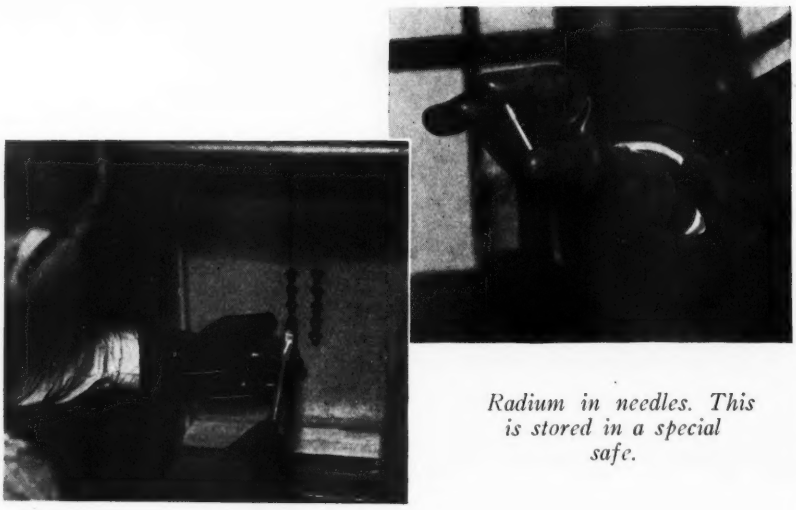
But though, if her assets were small, her ambition could not be stifled. She decided to obtain two degrees. At the age of 26 she passed first in the Master's examination in Physics and in the following year took the Master's Degree in Mathematics.

Marie was dominated by a passion for science. Early she had ruled love



LEFT: A stage in the refining process. UPPER RIGHT: A pit No. 2 vein Eldorado Mines at Great Bear Lake, N.W.T. LOWER RIGHT: A nugget of almost pure pitchblende.

Photographs Eldorado Gold Mines Ltd. and Toronto Star.



Radium in needles. This is stored in a special safe.

and marriage out of her life. So had Pierre Curie, a young and brilliant French scientist. But fate, or the mutual bond of scientific interest, decided otherwise, and they were married in July, 1895.

The Search of the Curies

The Curies—man and wife—were intensely interested in the discoveries of Roentgen and Becquerel. They decided to search for the unknown element which seemed to have the same powers as the x-ray.

First, they tried every known element but the required characteristics did not exist. They then started working on pitchblende with the assumption that the ore might contain one per cent of the unknown element. But their highest grade ore was to contain only one millionth part of radium. What patience and perserverence they must have had! It was like recovering a pinch of salt, dissolved and thoroughly mixed with tons of earth. It was more than "hunting for the needle in the haystack".

Large quantities of the ore were required. But they were poor and pitchblende was expensive, and available only in relatively small quantities in the mines of Bohemia. How they obtained it and how they managed to exist and persist in their search is a story in itself, but obtain it they did —tons and tons of it—and somehow they also secured the meagre essentials of life.

There was no way of taking the radium out of the ore, so the ore had to be taken away from the radium. First, the sulphur was burned out. Then, various other ingredients were progressively eliminated. To do this required seven tons of chemicals for each ton of concentrated ore, even after the technique was perfected. This illustrates the immensity of their task.

The small particle of radium naturally had a tendency to leak away with the solutions and the precipitates. Lack of bulk was, therefore, a handicap. But this handicap was taken care of when the affinity of radium for barium was discovered. Such large quantities of the latter were added that the barium content was 500,000 times that of the radium. What was finally obtained was the barium with the radium in its custody. This presented another problem—for the two had to be separated.

The barium and radium could not be separated by mechanical means. It happens, however, that radium salts are slightly less soluble than the barium and so, by a long series of fractional crystallizations, the radium was eventually separated 90% pure.

Victory

Ton after ton of ore to be pulverized, precipitated and the final products separated by crystallization; technique to be changed and changed again—these were the tasks the Curies set for themselves. It must have been tiresome and discouraging, but one night, forty-four months after their search started, Marie was victorious. She saw in front of her a decigram of radium and made the first determination of its atomic weight. Radium was discovered and fame came to the Curies.

For these two scientists, who had lived frugally for years, there was now the opportunity to capitalize on their discovery. They could take out patent rights on the technique, or they could open to the world the stores of their knowledge. Pierre left the decision to Marie. Without hesitation she replied, "Radium is not to enrich anyone; it belongs to all the people".

Using the Curie technique, the process of extraction was undertaken in the United States. An ore called Carnotite had been located in Colorado and Utah and the industry was assisted by the philanthropist James Douglas of New York—the same man who later was to assist in the Kingston General Hospital Building Scheme. One of the larger hospital buildings is known as the "Douglas Building" and it may be only a coincidence, but to-day this building houses the department extending radium treatments.

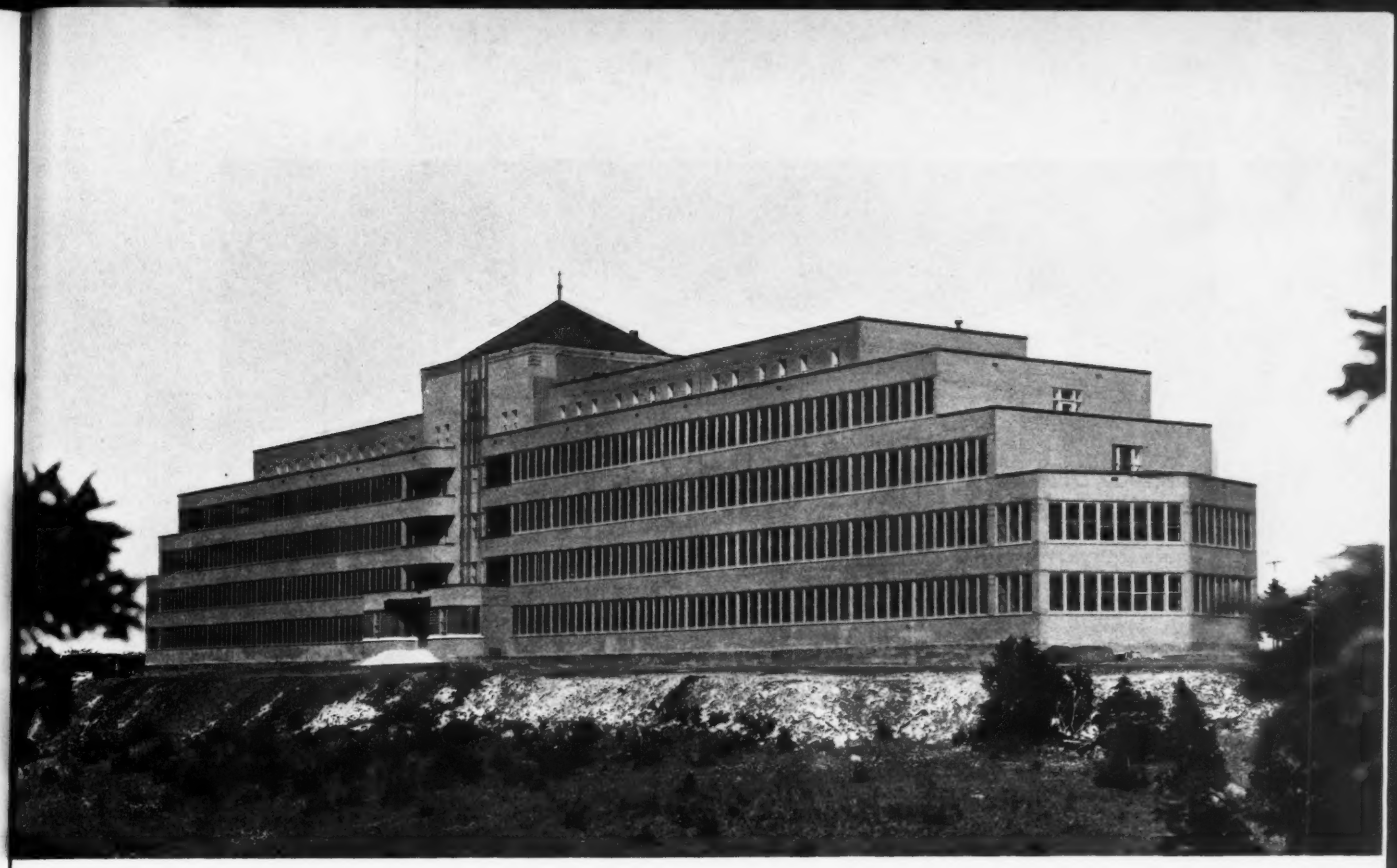
Following the last world war, rich radium ores were found in the Belgian Congo, and the product was refined in Belgium. This ore was 40 times richer in radium content than Carnotite and labor was cheaper in the Congo and in Belgium. As a result Belgium dropped the price from $100,000 to $70,000 a gram and on this price the production in the United States was forced to cease. Until a Canadian discovered radium bearing ore and refining was started in Ontario, Belgium had what was a world monopoly on the product.

The Discovery of Radium in Canada

In 1926 Gilbert LaBine, a Canadian, made a gold strike in Manitoba. But after a year this mine, Eldorado, ran into low grade ore and a shut down of operation was decided upon. Gilbert LaBine, however, persuaded the directors to hold the $200,000 remaining in the treasury to be used in the development of a good new mine, if, and when, he found it.

From the archives of the Canadian Bureau of Mines he read a geological report that cobalt existed in the rocks of the Great Bear Lake, North West Territories, on the Arctic Circle, 500 miles east of the Klondike and about 1,200 miles north of Edmonton.

(Continued on page 84)



Le Sanatorium St-Georges de Mont-Joli

LUCIEN MAINGUY, D.B.A.,
Quebec City

LE Sanatorium St-Georges est construit à Mont-Joli, (Cté. de Matane) sur un monticule de 850 pieds d'altitude situé à 1 mille ½ au sudouest de la ville, et à deux milles de la mer. L'orientation longitudinale nord nord-est, sud sud-ouest permet au soleil, dans son cycle journalier, de rayonner dans toutes les pièces. Le Sanatorium domine sept villages et la vue s'étend sur le fleuve jusqu'à 45 milles.

Nous avons cru résoudre tous les problèmes que suscite la réalisation d'un édifice de ce genre en employant judicieusement les matériaux que la science moderne met à notre disposition. La charpente de béton armé, les murs en brique solide, les planchers en tuile d'asphalte avec bordures et plinthes en terrazzo, toutes les cloisons en tuile de gypse (Gypsum Block) avec revêtement de plâtre, rendent cet édifice complètement é l'épreuve du feu. Afin d'éviter l'amoncellement de la poussière, partout à l'intérieur, tous les angles rentrants ont été arrondis, la mouluration et la menuiserie, simplifiées au maximum et toutes les portes sont du type "uni" (Flushwood). Les fenêtres sont à guillotine avec verre double et coupe-froid. Le problème du chauffage, d'une extrême importance dans un sanatorium où l'aération doit se pratiquer avec générosité, a été résolu par l'installation d'un système à vapeur "tiéde" qui, outre son efficacité, fournit l'avantage de fonctionner avec la plus grande économie.

C'est en vue de résoudre les problèmes de l'acoustique que les cloisons ont été construites en tuile de gypse, et que tous les corridors, salles de réception, salons, halls, etc., ont leur plafond en plâtre acoustique.

Enfin le problème de l'approvisionnement de l'eau a été résolu par l'installation, au sommet de la partie centrale de l'immeuble, de deux réservoirs en béton d'une capacité de 13,000 gallons chacun, ce qui met le Sanatorium à l'abri des interruptions passagères possibles dans le service de l'aqueduc local où cette institution puise son eau.

L'édifice entier prend la forme d'un T, ce qui permet: la synthèse, au centre de l'aile principale, des services, des quatre ascenseurs, des escaliers, des halls, des salons et salles de récréation; l'isolement des malades, de l'un et de l'autre sexe, aux extrémités gauche et droite et la mise à l'écart, dans l'aile postérieure, des cuisines et dépendances, des chambres de réfrigération, du réfectoire du personnel et des grandes salles com-

The new tuberculosis sanatorium at Mont Joli embodies the latest principles in sanatorium architecture and has been specially designed to meet the varied climatic conditions of eastern Canada.

One of the Balconies.

munes (telles que la chapelle et la salle des spectacles). Au sous-sol se trouvent la buanderie, la chambre des machines réfrigérentes, les caves à légumes, l'atelier de réparation, la chambre d'autopsie, la chaufferie, les incinérateurs, etc. Les chambres sont de un, deux et quatre lits. Toutes celles du rez de-chaussée sont aménagées avec chambre de bain.

En vue de créer une atmosphère de fraicheur et de gaieté pour le bénéfice des patients, (la santé morale étant un facteur important dans la cure contre la tuberculose) nous nous sommes appliqués à utiliser les différents tons pastels sur les murs.

D'une capacité de 300 lits, le Sanatorium est actuellement équipé pour recevoir 265 patients. Le personnel, au nombre de 80, se loge aux 4ième et 5ième étages où ont été prévues pour son usage en outre des chambres, des terrasses et des salles de recréation.

Le coût total du Sanatorium St-Georges est de $860,000.00, soit: $620,000.00 pour la bâtisse elle-même, et $240,000.00 pour son ameublement, équipment médical, etc.

L'une des difficultés que nous avons réussi à vaincre, croyons-nous, est celle de l'expansion et de la contraction des matériaux de structure, dues aux variations de notre climat. L'édifice du Sanatorium St-Georges, dont la façade mesure 440 pds. d'apparence d'unité parfaite, se compose, en réalité, de trois bâtiments juxtaposés. Chaque section invisible constitue une structure homogène. Les murs de chaque section s'accolent et leurs points de contact se dissimulent à l'extérieur, par une lisière de cuivre et à l'intérieur, par leur coincidence avec les divisions des pièces. Ajoutons que l'aspect extérieur de l'immeuble, par suite de l'agencement des galeries et des terrasses, lui donne une apparence pyramidale qui est beaucoup plus une création commandée par la logique des besoins que par les caprices artistiques de l'architecte.

Bref, l'édifice du Sanatorium St-Georges a été érigé avec le souci d'allier harmonieusement les exigences de la Science médicale moderne avec les secrets de l'Art architectural appliqué à la réalisation d'une grande oeuvre de bienfaisance humaine.

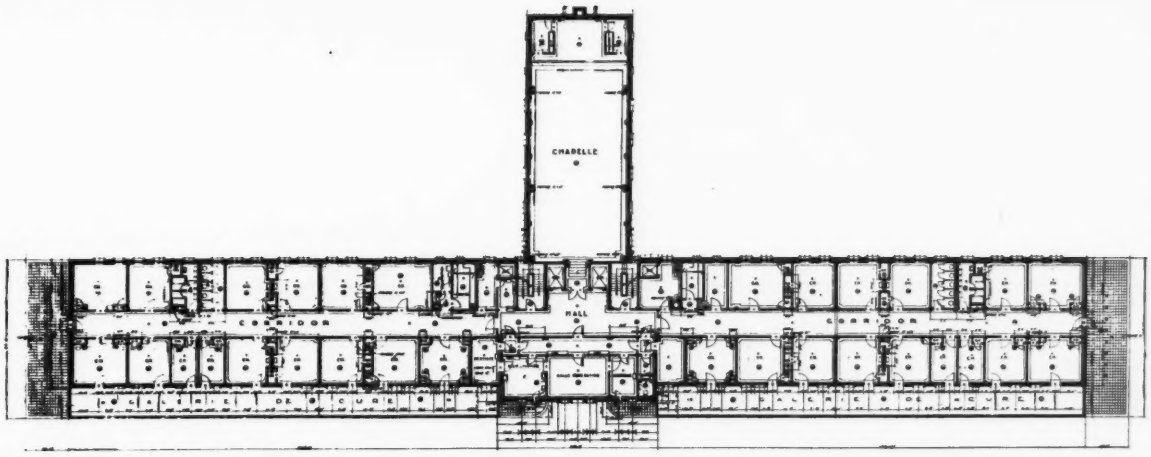
Synopsis

The beautiful new St. Georges Sanatorium is situated about a mile and a half from Mont Joli on the southern bank of the St. Lawrence. Built on a high hill, the sanatorium dwarfs the villages which lie below it. From its height one can follow the gleam of the St. Lawrence for many miles.

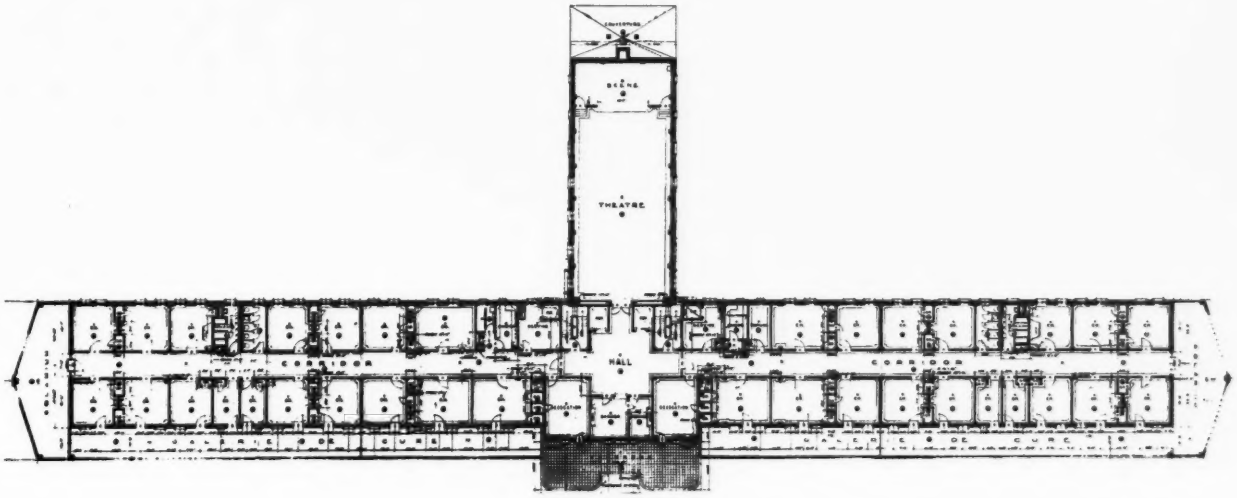
The sanatorium is extremely modern, both in design and construction, a pyramidal effect being obtained by the use of balconies which figure so prominently in the care of tuberculous patients. The longitudinal orientation, north, north-east, and south, south-west permits the sun to shine into all of the rooms at some time during the day. The building is, of course, completely fire-proof; the structure is of reinforced concrete, with solid brick walls, floors of asphalt tile bordered with terrazzo, and the partitions are of plaster faced gypsum block.

The building is in the form of a "T", which permits a central location for the different services, the eleva-

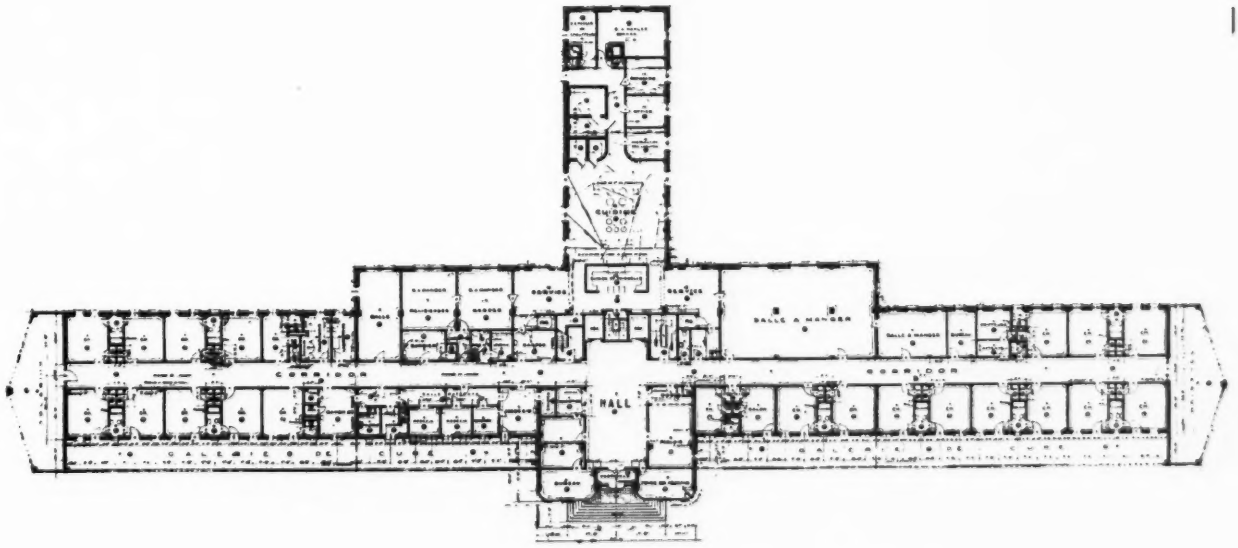
(Continued on page 84)



Fourth Floor Plan



Second Floor Plan



First Floor Plan

—Illustrations courtesy of Journal, Royal Architectural Institute of Canada.

Obiter Dicta

Lord Tweedsmuir, an Ardent Supporter of Voluntary Charities

ONE of the many reasons why Lord Tweedsmuir and his gracious Lady have endeared themselves so deeply in the hearts of Canadian people has been their constant and enthusiastic support of our various charitable organizations. The leadership given to these movements by the representatives of Their Majesties has indeed been an inspiration to those charged with the responsibility of carrying on this welfare work.

Particularly has Lord Tweedsmuir sensed the position of the civilian charities in time of war. Under the stimulus of war fervour it is but natural that many contributions, both large and small, would be diverted to the support of war-time activities. Already many regular contributions have been materially reduced, contributions not only of cash but of personal service, thus indicating the urgent necessity that hospitals make increased effort to maintain community interest in their welfare. In times like these redoubled effort is necessary, not only to gain new contributions, but merely to hold what hitherto might have been considered almost certain support.

This was well realized by His Excellency as revealed in a public statement made on behalf of welfare organizations but a few weeks before his untimely death:

"Now I would appeal for those civilian welfare services which must go on whether our country is at peace or war. Poverty and distress we have always with us, and their relief is a primary duty whatever other duties we may be forced to assume.

"Moreover, there will be much need of 'reconditioning' before certain classes of our people can meet that keying-up of production which war demands. Also, we must not, in the strain of new war, forget the needs of the veterans of the last war. So I confidently appeal to the people of Canada to maintain those voluntary charities which are essential both to the success of our war effort and to our normal community life."

Whom are we Fighting?

WIDESPREAD has been the discussion in press and pulpit and by fireside on the nature and extent of the enemy which has forced the British Empire to make the greatest effort in its history. Frequent still are the comments, possibly inspired by the Prime Minister's September statement directed as much to the German populace as to the British, that our quarrel is with Hitler and not with the German people. How true is this viewpoint? To what extent does Nazism represent the philosophy of the German people?

The conviction is growing that Hitlerism is only a symptom of a deep-rooted and long existant disease. Unless the philosophy underlying Nazism be destroyed, the exile of a few leaders, passing foam tossed up by the surges of social upheaval, will be to little avail. We have been prone to attribute the repeated violence and brutality to the younger generation, steeped in Nazism from the cradle. We conjure up memories of older adults, rotund peace loving villagers placidly smoking their jointed pipes as they help us decipher the trails on our *landkarte*. But these lovable and fast-disappearing folk of another generation were but one phase of German life. Nazism began back in the days of Napoleon and Wellington, for it was in the early years of the last century that Georg Hegel advanced his theory of the totalitarian state—the divine omnipotence of the state over the individual. "It is absolute. . . . It conforms to no rules of conduct. . . . It is without sin and beyond criticism. . . . War has merit because it inculcates discipline and moral soundness". Nietzche and Treitzche thundered the doctrine of "Might is right" to succeeding generations. Prussianism cast its arrogant mantle over the rest of Germany in the days of Bismarck; the German history has been a succession of one deliberately picked quarrel after another—Poland, Austria, Denmark, France and Belgium. In the last great war, the "Hymn of Hate" and "Deutschland Uber Alles" truly expressed the attitude of the people.

There is overwhelming evidence that this spirit of intolerance and of cruelty has permeated far into the masses. Hitler and Goering can be blamed for a succession of broken pledges, of blood purges and of untold misery but they cannot be blamed for all the inhuman acts perpetrated upon the Jews and upon the Catholics, nor can a few leaders be blamed for the systematic murder of the Polish people—aviators flying up and down the potato fields deliberately killing defenceless women and children; Polish children, the race of Paderewski, Marie Curie and Hofman, crammed into cattle cars and starved until frozen to death; the torpedoing of the Athenia!

Nor did defeat lesson their conviction of superiority. Perhaps that was because of the charity of the Allies who humanely accepted a German plea for peace before administering sufficient punishment to properly chasten them. The writer well remembers an incident in Germany a few years ago. After hearing a storm of abuse about the Versailles Treaty, he ventured to remind his German acquaintances that, after all, the Allies had won the war. What an outburst! We were to understand for all time that Germany had *never* been defeated. Never! Had she not overrun Belgium and blown nearly all of northern France off the map? Not an allied soldier had put foot

on German soil! British shipping was nearly all sunk and it was only a little socialist trouble at home that made them decide to call it a *draw*. Then we double-crossed them by that Treaty! Most of the younger adults and millions of their seniors are steeped in a two-fold philosophy—their own superiority over all other races and adherence to the principle that force is the only god worth recognizing. It is becoming increasingly clear that our task is not only to eradicate the madmen at the top but to change the philosophy of life of the majority of two whole generations of Germans—a much more formidable task, particularly as the only language they seem to understand is that of the bayonet.

What are You Planning for National Hospital Day?

IT is not too soon to lay your plans for National Hospital Day observance. This year May 12th, the birthday of Florence Nightingale falls on a Sunday, so there will be ample opportunity to enrol the co-operation of the pulpit. It is anticipated that Monday will be selected by many hospitals for the secular features of the local program, but others may prefer to take advantage of the Saturday crowds in town to hold the observance at that time. In every province a committee is being formed, general arrangements being under the national chairmanship of Dr. S. R. D. Hewitt of Saint John, N.B.

In the nineteen years since National Hospital Day became an accepted feature on this continent, its observance has grown tremendously. Competition for the beautiful trophies presented annually by the A.H.A. National Hospital Day Committee becomes keener each year. Every conceivable type of program is being developed. Newspaper publicity is being given more than ever; striking photographs of "news" interest are being freely accepted; radio announcements, talks and playlets are being featured each year. Movie theatres are running Hospital Day announcements and "trailers". Clubs of various kinds will accept hospital speakers at this time, will boost Hospital Day in their bulletins and may even hold a meeting at the hospital. Speakers and announcements in churches and at schools are particularly helpful. Schools, too, may hear talks on vocational choice by nurses, doctors, dietitians and others, may be shown hospital movies and be assigned poster projects and essay contests. Business firms may be asked to display posters, use car windows and bumper signs and put stickers on their mail. At the hospital itself there may be "open house", a garden party (if in a warm part of Canada), exhibits of various hospital activities, a baby show and reunion for babies born in the hospital, a hospital concert, a nurse alumnae homecoming and many other activities. A community health meeting or the nurses' graduation may be held on the Monday. In some places a parade with especially prepared floats is arranged.

The observance of National Hospital Day on an adequate scale requires considerable work and effort, but the results in community interest and goodwill repay one manyfold for the effort. Valuable information outlining the various procedures that have been found effective elsewhere has been prepared in pamphlet form (1-5) by the Chairman of the A.H.A. National Hospital Day Committee, Albert G. Hahn of Deaconess Hospital, Evansville, Indiana. Many excellent ideas are embodied in these leaflets.

Canada's Health Record High in 1939

THE health of Canada is definitely improving, judging by an analysis of the death rate among approximately a million and a quarter Canadians who hold policies in the industrial department of the Metropolitan Life Insurance Company. The cumulative death rate in 1939 was on a par with 1938, these two years jointly having the lowest mortality rate in the Canadian experience of the company. New low mortality records were established in 1939 for tuberculosis, pneumonia, scarlet fever, diarrhoeal diseases and accidents.

Tuberculosis, which was the chief cause of death up to eleven years ago, is now in third place in the list of causes of death for Canadian wage earners (it is 7th for the population as a whole). The current death rate is nearly 7 per cent lower than for 1938 and 45 per cent lower than for 1939. In this ten-year period the mortality from pneumonia has been reduced by 55 per cent; influenza shows a decline of nearly 70 per cent. The four principal communicable diseases of childhood—measles, scarlet fever, whooping cough and diptheria—have shown a combined decline of 65 per cent. To-day diptheria causes fewer deaths than whooping cough. Diarrhoea and enteritis have dropped 75 per cent in the decade. Deaths from puerperal diseases have declined about 25 per cent in 10 years. This figure is complicated by the declining birth rate in Canada, but undoubtedly the new treatment of puerperal sepsis will cause still more definite decline next year. Fatal accidents have dropped 30 per cent in the 10 years since 1929, although there has been a considerable increase in motor travel. Accidents from this cause are still at about the same level as ten years ago. Other types of accidents have declined about 35 per cent.

At the same time other reports are not so good. Cancer, although it has shown no increase as compared with 1938, has risen about 35 per cent in 10 years. Diabetes, heart disease, coronary disease, chronic nephritis, influenza were all higher in 1939 than in 1938. Over the 10 years all but influenza have shown appreciable increase. There were more suicides in 1939 than in 1938. For all cases of death combined, the 1939 death rate is lower by one quarter than for a decade ago. This is a record of which our health forces in Canada may well be very proud.

Electron Microscope Reveals New Field to Scientists

AN electron microscope has been developed in the Department of Physics at the University of Toronto which bids fair to reveal many secrets in medicine, physics and biology hitherto unrevealed. Hitherto, microscopic study has been limited by the fact that use of light waves as utilized in the ordinary microscope does not permit one to see any detail a particle less than about .2 microns or 2/100,000ths of a cm. in diameter. Barnard and Gye devised a microscope making use of ultra-violet light which has a wave length of one-half that of visible light. By this means they were able to double the old magnification.

The problem has been to utilize the shortest possible wave lengths. It is impossible for any instrument to separate in an image two fine particles of an object if those particles are really closer together than the wave length of the light used. It was thought for a while that x-rays might be utilized but all attempts to make x-rays amenable to refraction by any kind of lengths have failed. Electrons, however, have provided the solution, although a different medium than lenses has been developed to provide enlargement.

Magnifications of x33,000 Obtained

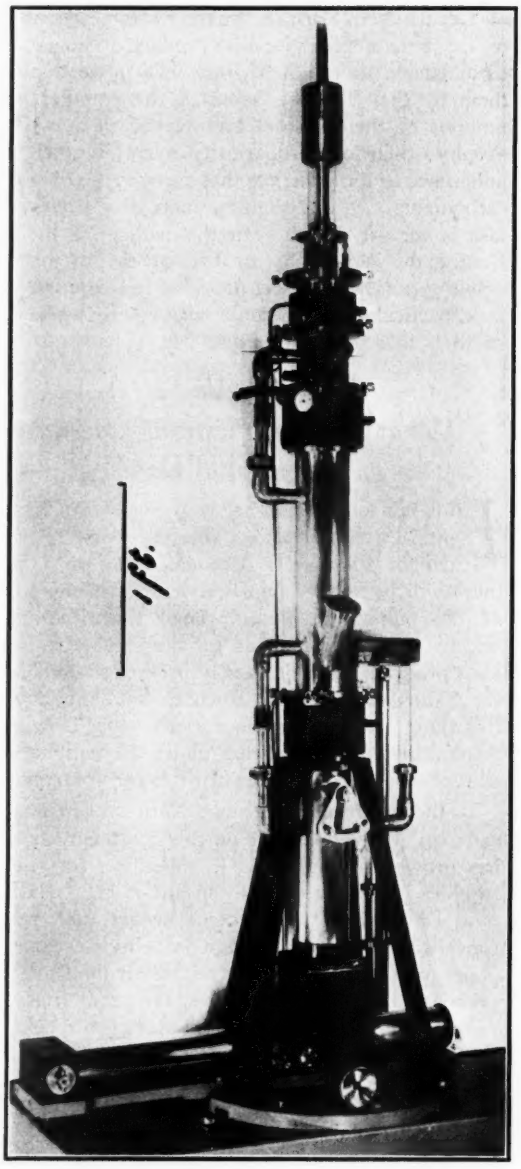


Figure No. 1

The electron microscope. Electrons from a cold cathode or hot filament pass up through a concentrating magnetic coil, pass through the specimen, then through a second coil to form the first image and a third coil to give a second enlarged image on a sensitive plate.

Working under the guidance of Professor E. F. Burton, Professor of Physics at the University of Toronto, James Hillier and Albert Prebus have developed an electron microscope in which the lenses which refract the light in the case of the ordinary microscope are replaced by magnetic fields which have a similar effect on a beam of electrons. In other words, a type of magnetic field has been discovered which has the same effect on a beam of electrons as a glass lens has on a beam of light. The result has been the development of a microscope (see fig. 1) which can photograph particles smaller than ten millimicroms (one-millionth of a cm.). For practcial purposes, most of the photographs taken with the electron microscope are taken at magnifications at approximately x12,000. (With the ordinary hospital microscope magnification with the oil immersion lens is only about x1200—1500.) There is considerable detail on the plates that is still invisible to the eye. Further enlargement makes this visible to the eye.

A preliminary report of the work on this electron microscope appeared in the Feb., 1940 issue of the Canadian Medical Association Journal. In this article there were reproduced illustrations of magnifications of from x16,000 to x33,000. Further studies will be reported in the near future.

New Hospital for Incurables and Convalescents Opened in Windsor

The East Windsor Health Association, Windsor, Ontario, has opened its new hospital for incurables and convalescents. The hospital, which is a renovated school building, will house about 100 patients. The Association was organized in 1931 to provide accommodation for tuberculous patients who could not then be given beds in sanitoria. When sanatoria accommodation was increased in the district, the charter of the association was altered and it now operates a home for incurables and convalescents. It is a non-profit organization, with all profit being returned to City of Windsor.

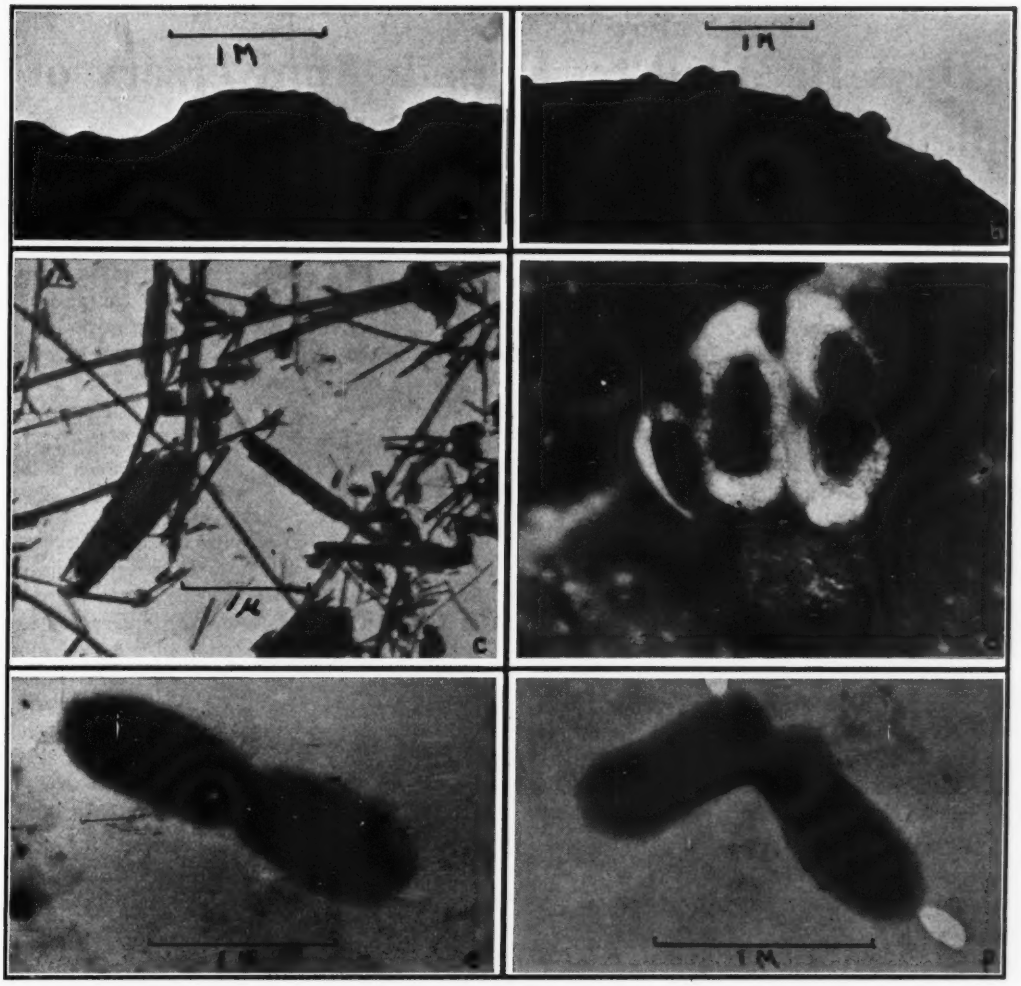


Fig. a.—Portion of edge of new razor blade about 1/8,000 of an inch. x 24,000. Fig. b.—Edge of a pollen particle from *Cupressus sempervirens*. x16,000. Fig. c.—Small fibres of asbestos making up asbestos dust. x19,000. Fig. d.—Group of pneumococci from peritoneal fluid of a dead mouse. x18,000. Fig. e.—Method of division of a *B. prodigiosus*. x28,000. Fig. f.—Method of division of diptheroid bacillus. x33,000. In each cut the straight line represents 0.0001 cm.

Goodbye Catgut!

It would appear that the cat which has been contributing catgut for so many years to the surgeons of this continent has at last lost its ninth life. Under the new pure food and drug laws in the United States, people who write labels and coin names must keep to the truth. As it is many a long day since cats had anything to do with catgut, the manufactures of catgut in the United States were asked to select a name which could more accurately express the product. Accordingly, it has been agreed that catgut to the south of us at least will be known henceforth as "surgical gut U.S.P." In similar fashion the government has objected to the terms, 10, 20 and 40-day chromic gut, for these days of alleged duration are purly approximations. Accordingly chromic gut in the future will be known as mild, medium and extra. It will be required also that artificial sutures indicate on the label that they are synthetic.

Tuberculosis Admissions at London by Occupations

The 1939 report of the Queen Alexandra Sanatorium at London, Ontario, contains an interesting breakdown of the admissions on a basis of occupation. The groups with most representation among the 607 admissions are as follows:

Housewives	88
Unemployed	60
Farmers	47
Laborers	42
Miners	36
Nurses (including 7 students)	22
Salesmen	20
School Boys	19
Housemaids	18
Clerks	14
Children	14
Factory Workers	14
Mechanics	12
Truck Drivers	9

J. Clark Keith Honoured

Mr. J. Clark Keith of Windsor, Ont., has been signally honoured by his election as vice-president of the Engineering Institute of Canada. Mr. Keith, who is general manager of the Windsor Utilities Commission, has been very active in hospital work, was manager of the Metropolitan Hospital for a time and has been a director of the Ontario Hospital Association for many years.

Early Days Recalled by Fiftieth Anniversary of Medicine Hat General Hospital

FIFTY long years ago the opening of the Medicine Hat General Hospital was marked by a brief and businesslike item in the Medicine Hat *Times* (now the *News*) to the effect that the hospital had been opened for the reception of patients "in a quiet way", with, however, the blessings of three ministers, duly listed as Presbyterian, Episcopal and Methodist. The staff consisted at that time of one physician, a head nurse and assistant, a housekeeper and a janitor.

The assistant to the head nurse was a very recent graduate—a member of the first graduating class of the Winnipeg General Hospital, the class of 1889. Mary Ellen Birtles had come to Canada with her parents from England in 1883. To-day she is in her 81st year, a resident of Alexander, Manitoba, and the proud possessor of an O.B.E., which she received in 1937.

At the request of Miss A. E. Pederson, present superintendent of the hospital, Miss Birtles has written some interesting memoirs of the hospital which was at that time "the only hospital between Winnipeg and Nanaimo, B.C." We quote:

"It was in February, 1890, that I first went to Medicine Hat. Miss Grace Louise Reynolds was in charge; Dr. Olver was Medical Superintendent, but, being married, he resided in the town. His house was connected with the hospital by a private telephone. He also had a drug store in the town. In a short while, Dr. Calder came from Winnipeg and entered into partnership with Dr. Olver and, of course, visited the hospital, too. So we four constituted the first medical and nursing staff of the institution. There was no domestic help, so of course Miss Reynolds and I managed the work between us. She prepared the meals and looked after the downstairs work. I attended to the furnace and did the upstairs work—sweeping, dusting and so on, besides attending to the patients. When any surgical work was to be done, we had to arrange the work accordingly; Miss Reynolds gave the anaesthetic and I looked after the instruments and waited on the doctors.

"There was no sterilizer, so we had to resort to boiling the instruments in a large saucepan with steamer over it for towels and dressings. It was a difficult matter to obtain domestic help, either maid, cook or orderly, and still more difficult to keep them, as conditions were so different in a hospital to what they had been accustomed. But by degrees things began to improve when we were able to secure proper help.

"We were on duty every waking hour, day or night. In the case of a sick patient or new surgical case, I would take night duty. We just simply divided the work between us. . . . Patients came from far and near. It was the only hospital between Winnipeg and Nanaimo, B.C.

"Aseptic surgery was just becoming known about that time with much better results than formerly. Dr. Calder was very courageous and did some wonderful work and successfully, too, considering how little there was to work with."

Anxiety for Finnish Maternity Hospital

With the repeated savage attacks on Viipuri by the Russians, the fate of the new maternity hospital is a matter of anxiety to those who have followed with interest the planning and erection of this very modern and fully equipped obstetrical unit. It seems to be characteristic of the totalitarian armies, be they German, Jap or Russian, that they ruthlessly destroy hospitals, universities and any other evidences of humanitarian or cultural activities.

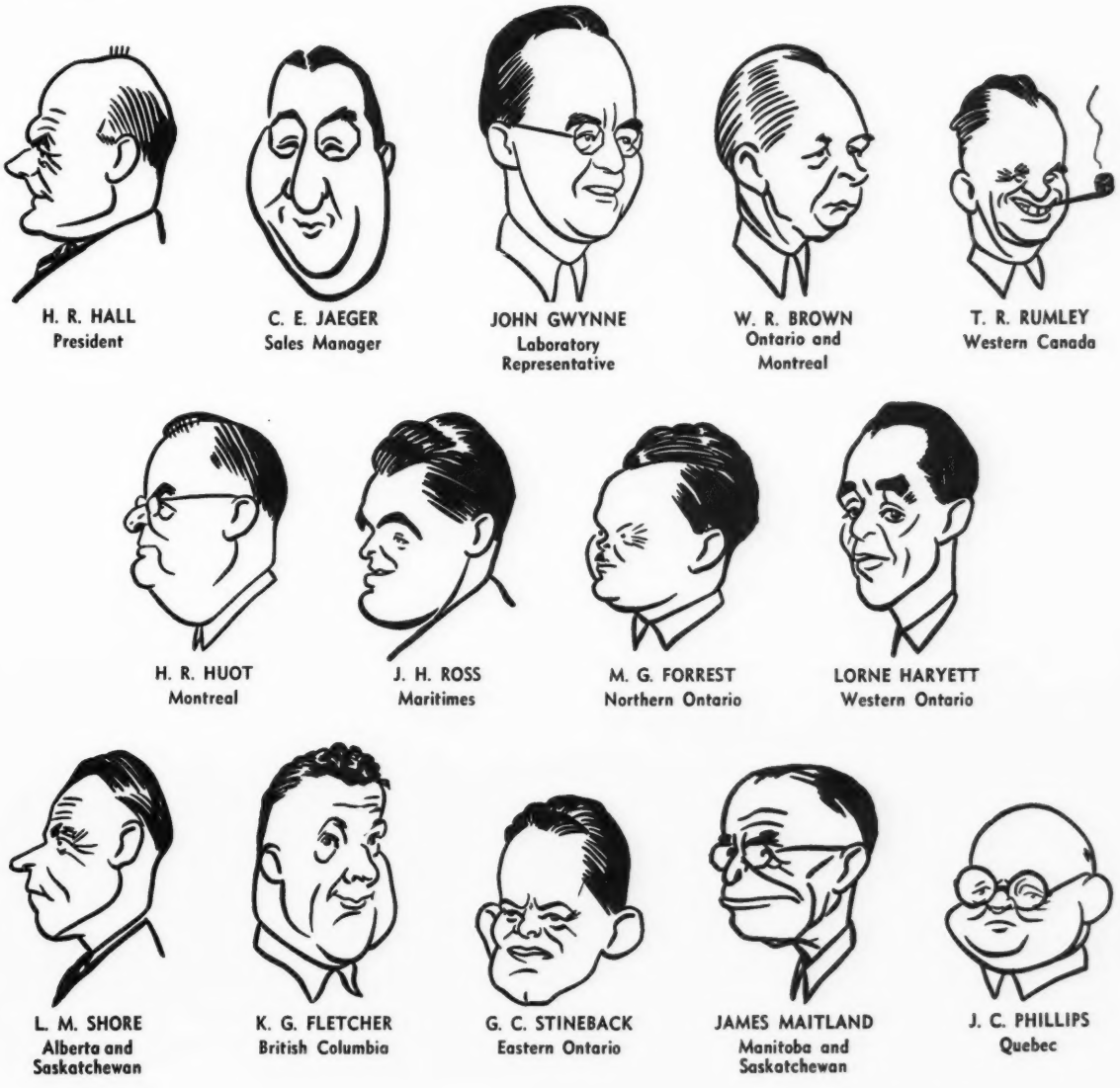
Scouts do a "Good Turn" in Montreal

X-ray photographic equipment, purchased from the "Good Turn" fund of the Boy Scouts Association of Montreal, was presented to the Children's Memorial Hospital in January. Dr. de Belle, superintendent of the hospital, is shown receiving ribbons attached to the equipment from Scouts representing the different branches of the Association. Provincial Commissioner Wardleworth and S. C. Hollard, district scout commissioner, as well as officers of the Montreal Scout Council were present.

Meet These "Service" Men

Recently Bauer & Black Limited had caricatures made of their hospital sales representatives. The caricatures are reproduced below.

We believe you will enjoy trying to recognize the man who calls regularly at your hospital.



H. R. HALL
President

C. E. JAEGER
Sales Manager

JOHN GWYNNE
Laboratory Representative

W. R. BROWN
Ontario and Montreal

T. R. RUMLEY
Western Canada

H. R. HUOT
Montreal

J. H. ROSS
Maritimes

M. G. FORREST
Northern Ontario

LORNE HARYETT
Western Ontario

L. M. SHORE
Alberta and Saskatchewan

K. G. FLETCHER
British Columbia

G. C. STINEBACK
Eastern Ontario

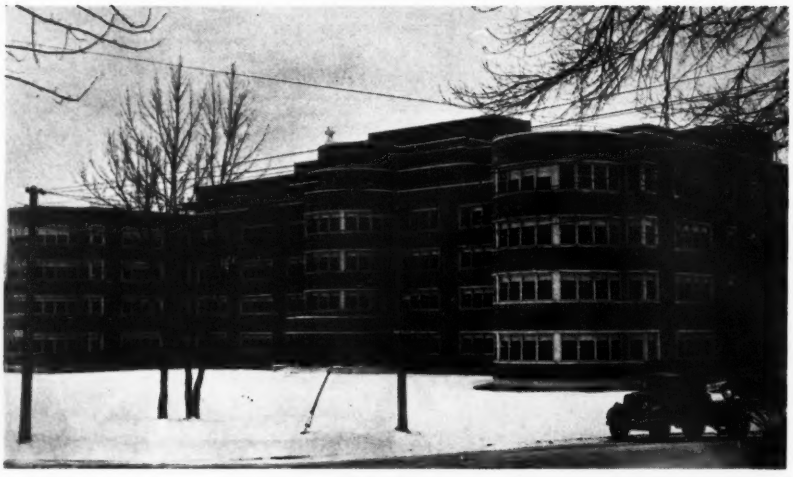
JAMES MAITLAND
Manitoba and Saskatchewan

J. C. PHILLIPS
Quebec

Service to its hospital customers is the watchword of the Bauer & Black organization. The men whose caricatures appear here are, therefore, primarily "Service" men.

BAUER & BLACK LIMITED

STATION K **TORONTO**



Courtesy Toronto Telegram, 1940

New Hospital for Incurables at Toronto

OUR Lady of Mercy Hospital for incurables was formally opened in Toronto on February the 12th by Hon. Albert Matthews, Lieutenant-Governor of Ontario. The Sisters of St. Joseph, who are in charge of the humanitarian work to be carried on in this new hospital, were greatly honoured in that the opening was the only official function not cancelled by the Lieutenant-governor during the period of mourning which followed the death of the Governor-General of Canada. His Grace, Archbishop J. C. McGuigan, also took part in the opening ceremony. Among the distinguished guests who represented the medical profession and administrators in the hospital field, was Dr. B. T. McGhie, Deputy Minister of Health for the Province of Ontario.

The new five-storey brick building, which will accommodate 275 patients, was built to replace the old hospital on Sackville Street, in which the Sisters of St. Joseph have carried on their work for many years.

In the basement are the large main kitchen, with smaller auxiliary kitchens and refrigeration rooms, the nurses' kitchen, and the nurses' and employees' dining-rooms. Here also are the dental suite, the laboratory, the occupational therapy room and the physio-therapy department. Quarters for male employees are at one end of the basement floor. Between the new hospital and St. Joseph's Hospital, which is adjacent, a new laundry has been built to serve both hospitals. The power plant which serves St. Joseph's Hospital will be utilized by the new hospital.

The administration offices, reception room, medical staff-room, the chaplain's quarters and common rooms for the nurses are on the first floor. Some ward accommodation is also provided on the first floor.

The second, third and fourth floor provide private, semi-private and ward accommodation. Altogether, there are twenty private rooms and twenty semi-private rooms, with the remaining accommodation in 6-bed wards. The wards are spacious and light and there are three solaria on each floor for the comfort of the patients. One of the features which is designed for the long-stay patient is the roomy, built-in individual wardrobe beside each bed. The wardrobe is flush with the wall and is almost completely unobtrusive. Individual bed stands are large, with both shelves and a drawer. There is a hooded light over each bed and the bell signal system, within easy reach of the patient, has been used throughout the hospital. Each ward has a radio. The private rooms are very attractive. Each has its own toilet, but shares the bath with an adjoining room. Bathrooms, locker rooms, utility rooms and service kitchens are located on each floor.

The beautiful chapel is on the second floor and rises two stories in height, as does the auditorium on the fourth floor. The auditorium is equipped to show movie pictures.

The hospital is entirely fire-proof. Floors in corridors and utility rooms are terrazzo; linoleum with terrazzo borders has been used in the wards. The heating is by hot water. Electricity has been used for cooking throughout the kitchens and pantries. Food and linen service are of the central type.

Rev. Sister Ermelinda, sister superior of the old hospital on Sackville St., will be in charge. Rev. Sister St. Edmund, director of nurses, superintended the erection of the building, which was built at a cost of, approximately, $600,000. Architects were Marani, Lawson and Morris, and the Pigott Construction Company of Hamilton were the contractors.

Editorial Board Changes

We welcome to the Editorial Board two new members: Dr. J. E. de Belle, Superintendent of the children's Memorial Hospital, Montreal, who will replace Dr. John C. Mackenzie during his absence overseas, and Dr. F. A. Logan, Assistant Superintendent Medical of the Toronto General Hospital, who will replace Mr. Carl I. Flath, now with the Michigan Society for Group Hospitalization. The Editor and the readers of this journal are deeply indebted to Mr. Flath and Doceor Mackenzie for their repeated assistance in promoting the welfare of The Canadian Hospital.

McGill Honours Dr. George F. Stephens

Dr. Geo. F. Stephens, President of the Canadian Hospital Council, has been made a Governor of McGill University.

New 20-bed Hospital at Claresholm

Claresholm (Alta.) Municipal Hospital was officially opened on February 7th. This 20-bed hospital will serve a great need for hospitalization facilities in this area. Mr. Stanley Wyatt, acting chairman of the Board, presided at the opening ceremonies and Dr. M. R. Bow, Deputy Minister of Health, spoke. After the ceremony, which was attended by over 1,500 people, there was an inspection of the hospital and a reception and tea.

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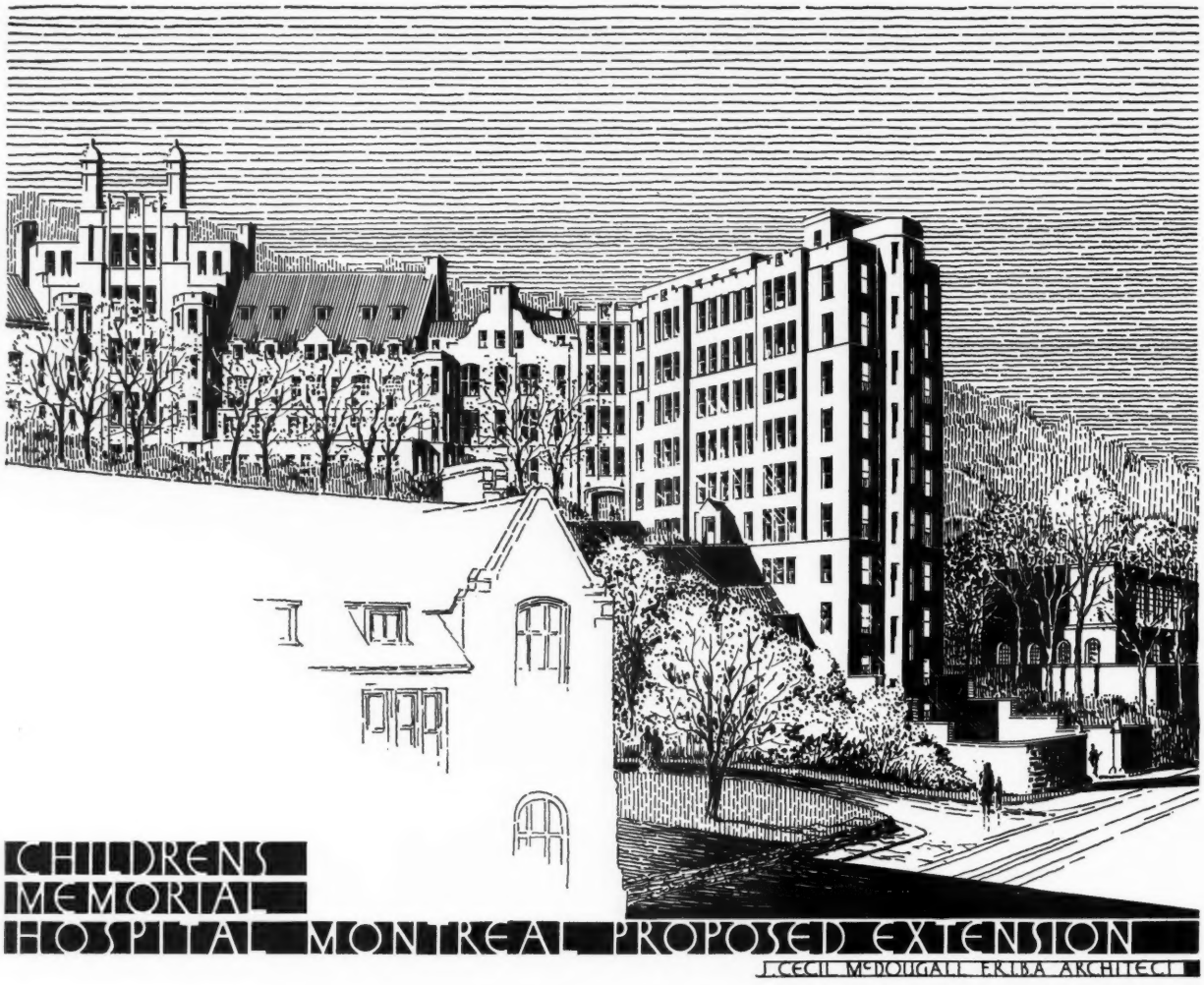


New Addition at Children's Memorial Hospital

The new building being erected at the Children's Memorial Hospital will add 45 or 50 beds to the hospital accommodation and will also permit improved facilities for a number of service departments. The new wing, which has been adapted for a hillside site, will contain the new operating suites, x-ray department, pathological, bacteriological and biochemical laboratories, the haematological laboratories, the kitchens, dining rooms, a large theatre for students and other class rooms. Mr. J. Cecil McDougall of Montreal was the architect.

Medical Care in Rural Areas

The organization of regional comprehensive services as contrasted with those centered on specific diseases or certain groups of the population, undoubtedly is of paramount importance in rural or sparsely settled areas. The setup chosen in Scotland for a community of fishermen and small farmers numbering about three hundred and twenty thousand persons (The Highland and Island Service) gives a good picture of how government participates in promoting curative medicine without a sweeping change in the nature of medicine. The basic principle is the use of tax-money to supplement and improve existing services. Public subsidies to practising physicians further the supply of adequate physicians' services by ensuring them a minimum income. In return the physicians must charge patients within the low income brackets moderate fees not exceeding a fixed limit. The supply of adequate nursing care is promoted by public subsidies to voluntary agencies in order to increase the number and improve the qualifications of nurses available in the area. Furthermore, hospital services in the area are strengthened by financial aid from public funds, emphasis being laid on the concentration of beds in well equipped main hospitals and on the appointment of salaried specialists who would not otherwise be able to make a living.

—From "Recent Developments in Tax-Supported Medical Care in Great Britain". Franz Goldman, Yale University School of Medicine.

Chemical Problems of Laundering

By C. H. BAYLEY,
National Research Laboratories

Winter Damage

THE damage occurs chiefly in dampwash or in fabrics that have been washed at home and hung out to dry and which, in this process, have been exposed to an atmosphere containing sulphur-bearing gases, such as occurs in the industrial areas of large cities. Under certain atmospheric conditions, in which the air is still and the humidity high, the fabrics tend to absorb these sulphur-bearing gases, which become converted into sulphuric acid in the damp fabric. The acid so formed, although very weak, becomes concentrated on ironing and attacks the fabric to give chemical damage.

We exposed two series of test samples—one in Toronto and the other in Montreal, in suitable locations and found that there was very definite evidence of chemical tendering when the exposed fabrics were ironed after exposure. Moreover, the presence of traces of iron rust in the fabrics seemed to accelerate the damage. It seems that this type of damage, which is associated with the corrosive action of atmospheric gases, also has an important bearing on the life of cotton curtains. Curtains pick up sulphur-bearing gases, from the atmosphere of the home, during the winter months. If these absorbed compounds are allowed to accumulate, they tend to accelerate the tendering of curtains, especially under the influence of heat from radiators. Our work has indicated that the life of curtains should be appreciably lengthened by more frequent laundering, since this prevents the accumulation of dangerously high amounts of corrosive products.

Chemical Effects of Finishing Agents

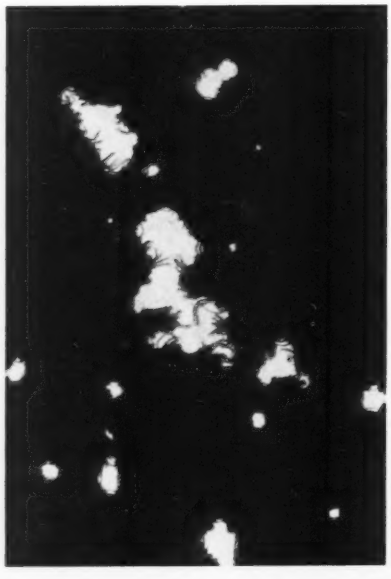
We are living in an age in which there is a tendency to increase the serviceability of our clothing by means of chemical treatments. Thus we have chemical processes for making our clothes crease-resistant, water-repellent, shrinkproof, flameproof, mothproof, etc. Whilst the most logical point at which to undertake these treatments is at the textile mill—as a part of the mill finishing operation—there is a growing tendency to carry out many of the above processes on fabrics during their sojourn at the commercial laundry or cleaning plant.

Processes under these circumstances frequently have a very real sales value, and for this reason many plants have made use of them and have advertised the fact to their customers and the general public.

Whilst there is nothing fundamentally wrong with the use of such processes in the laundry, the launderer should make certain that they are safe before they are used.

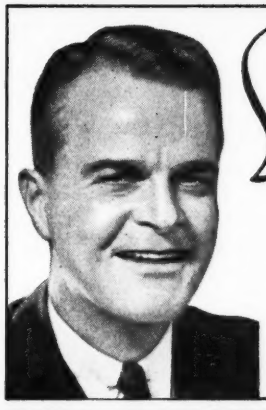
Let us suppose that a certain type of proofing agent causes a slight but appreciable loss in tensile strength of a fabric to which it is applied. The process, if applied to the piece-goods in the mill, is carried out only once on a given piece of goods. On a garment in the laundry, however, it may be carried out many times on the

Note: The National Research Council of Canada, through its Division of Chemistry, maintains a research service on laundry problems which has proven invaluable to the laundry and dry cleaning industries in this country. This article is abstracted from an address by Mr. Bayley before the E.C.L.A. Convention last summer. The full address was published in the "Laundry and Dry Cleaning Journal of Canada".



1. Cotton sheet showing corrosive damage due to contact with acidic medicinal preparation.

2. Cotton terry towel showing failure due to low tensile strength in the warp (lengthwise) direction.



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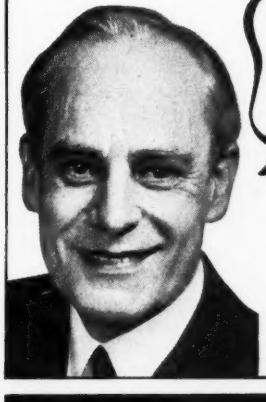

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same garment; and under these conditions the small amount of damage which takes place at each treatment soon assumes serious proportions.

Wet Wash Formula

Now a few words about some chemical aspects of detergency:

Perhaps you will recall references of last year to the question of wetting out in the break. We have made some progress in putting those ideas to practical use. The use of sulphated fatty alcohols in the break, when dealing with heavily soiled wet wash, appears to be definitely beneficial in cutting down the number of "go backs" and in getting away from the necessity of too heavy bleaching which is often done in this type of work.

Table I is a copy of a formula which is being successfully used in one of the larger laundries in Montreal.

The formula shown is very similar to the one which this particular laundry was using previously. The chief difference is the use of the sulphated fatty alcohol in the break. The results of test bundles run before and after the change, but, even more, the great improvement in the quality of the work and the reduction in the number of "go backs" were both very striking.

TABLE I

FORMULA FOR HEAVILY SOILED WET WASH

Wheel	42 x 84 monel cascade
Load	200 to 250 lb.
Alkali	soda ash
Soap	neutral high-grade laundry chip
Break solution	sulphated fatty alcohol paste
Sour	sodium silicofluoride

Operation	Supplies	Temp. °F.	Time (min.)	Level (inches)
1. Break		90-100	5	6 to 7
2. Suds	High suds	130	10	6
3. Bleach suds	Heavy suds	150	10	5 to 6
4. Suds		200	10	5
5. Rinse		180	5	10
6. Rinse		180	5	10
7. Rinse		140	5	10
8. Sour and blue		cold	3	10 to 12

Total running time = 53 min.

TABLE II

(a) Break—neutral soap solution 2½-3 lb. per 225 lb. load ..... 4", 125°F. 10 min.
1st suds—2 lb. metasilicate in solution ..... 4", 160°F. 10 min.
2nd suds—about 4 oz. of soap in solution + bleach ..... 4", 145-150°F. 10 min.
Follow by 5 rinses, first three hot.

(b) Break—1½ lb. metasilicate in sol. + 1 lb. S.F.A. paste
1st suds—7.5 gal. built soap sol. containing 30 lb soap, 15 lb. metasilicate and 90 gal. water .....
2nd suds—1.5 gal. built soap sol., bleach .....
} temp., times and water levels as in (a)

(c) Break—2 to 2½ lb. metasilicate in solution, allow to run 5 minutes and add about 1.5 lb soap in the form of a neutral soap solution .....
1st suds—about 0.5 lb. soap in solution .....
2nd suds—about 0.1 lb. soap in solution, bleach .....
} temp., times and water levels as in (a)

TABLE III

Soap solution	30 lb. neutral soap in 90 gallons (Solution A).
Alkali	41 lb. orthosilicate in 40 gallons (Solution B).
Load	229 lb. thrifty white in nets.
Break	1½ gal. solution B run for 5 minutes and then add 2 gal. solution A and run for another 5 minutes. Temperature 125° F. Water level 4". Time 10 minutes.
1st Suds	1 gal. Solution A. Temperature 155-160° F. Water level 4". Time 8 minutes.
2nd Suds	½ gal. Solution A. 2 quarts 0.6% available chlorine bleach. Temperature 145-150° F. Water level 4". Time 10 minutes.
Rinses	Four rinses at 10" water level for 3 minutes each at the following temperatures: 155-160, 155-160, 130-140 and 110-120° F.
Sour and blue.	

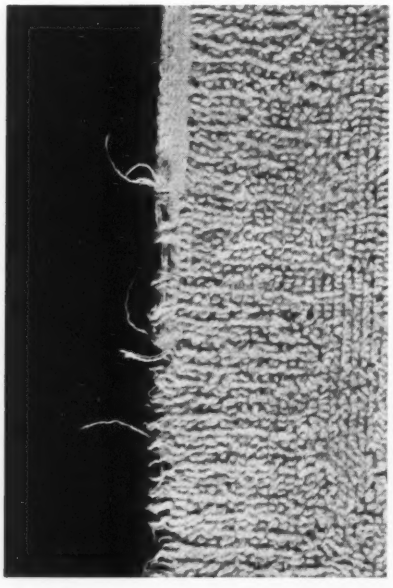
Total running time = 44 minutes.

Silicate Builders

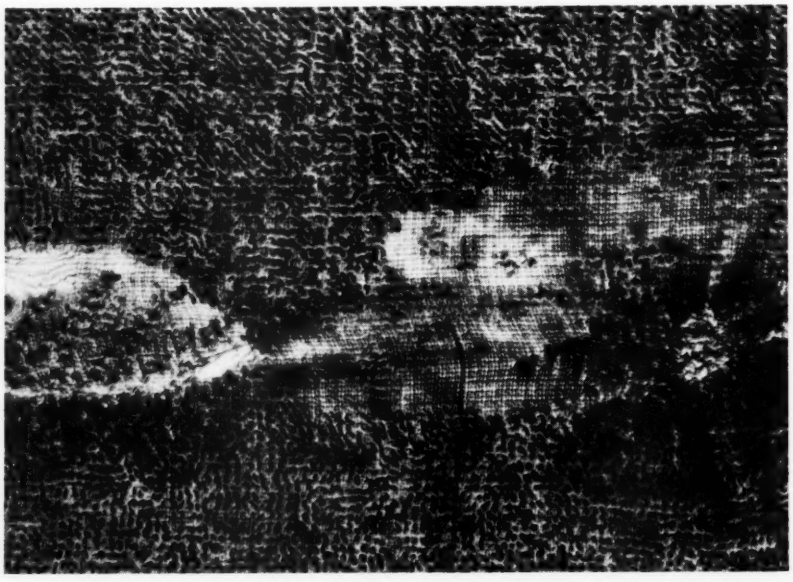
During the past five years, the importance in laundry chemistry of the factor known as pH has become increasing apparent.

Whilst it is still too early to make any statement regarding the best pH value for washing solutions, there are indications that the pH requirements of the various parts of the washing process, *i.e.*, the break, suds and first

(Continued on page 78)



2. Cotton terry towel showing failure due to poor construction of selvedge.



4. Cotton terry towel showing damage due to attack with corrosive material, which in this case was sodium hypochlorite solution used as a foot wash in the locker room of a golf club.

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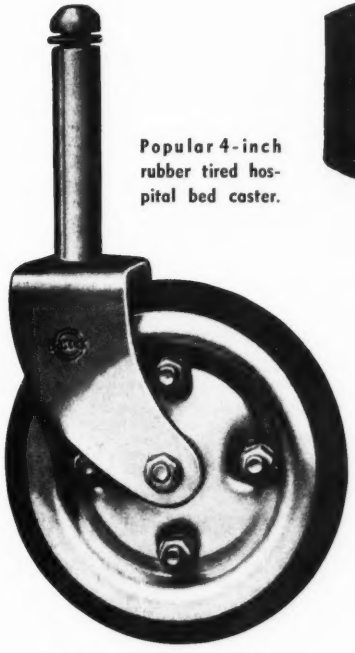

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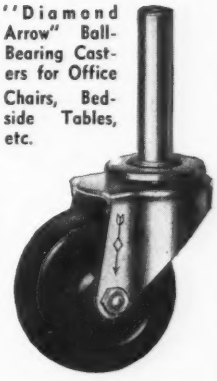

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Here and There in the Hospital Field

By THE EDITOR

AGAIN Dr. William H. Delaney, Medical Superintendent of the Jeffery Hale's Hospital, Quebec, is in a very expansive mood. His daughter, Miss Marjorie Delaney, the ladies singles badminton champion of Canada, has been victorious in competition. Recently she went to Philadelphia on the invitation of the famous Penn Athletic Club to participate in the badminton tournament and won both the ladies singles and ladies doubles. Her partner in the doubles victory and the runner-up for the ladies singles was her team-mate, Miss Louise Turcott, daughter of Dr. Rene Turcott of the medical staff of the Jeffery Hale's Hospital. Before leaving, this team won the ladies doubles in the invitation tournament at Quebec. Upon returning Miss Delany won the provincial championship ladies' singles, together they won the ladies' doubles and Miss Turcott was partner in the mixed doubles winning team.

* * *

Good Teamwork

Only those who have been through the experience can visualize the appalling amount of work required in the complete transportation from one site to another of the equipment, supplies and patients of a large hospital. Publicity has been given recently to the remarkable achievement of the David Lewis Northern Hospital in Liverpool, which hospital received sudden orders on Sunday, September the 3rd, to evacuate the entire hospital from the city to another building in the suburbs in order that the vacated buildings could be used as an emergency base. This instruction was not wholly unexpected and some plans had been prepared, but it was supposed that the transplantation would require about four days of hard effort. When they actually went at the task in a systematic fashion, they were successful in accomplishing their herculean task in one day. By evening 100 beds were ready for the patients in the new quarters.

"Dishonourable Getting" Outlawed

Starting with the New Year, the Shanghai branch of the Chinese Medical Association made it contrary to ethical medical procedure for medical practitioners to receive commissions from drug stores, laboratories, hospitals and nursing institutes to which they refer prescriptions or patients. Apparently, prescription rebates and other commissions have amounted to from 10 to 30 per cent. Some of our older practitioners recall the days when it was considered legitimate for a doctor to get a commission from the drug store on his prescriptions, but that practice has been for many decades considered most unethical in this country. Commissions, whether open or secret, are considered quite in order in many business circles and as a result many business people fail to understand professional ethics with respect to commissions, advertising, etc., although all these points in the professional code of ethics have been developed to protect the consumer—in this case the patient.

* * *

"Private Lines"

A popular monthly magazine has a column each month in which it picks out brilliantly worded sentences from current literature. Some of their choice, particularly the similes, are most refreshing. One of our administrators who has suffered long and in anything but silence, at the hands of various surgeons, writing to a friend recently, drew a graphic pen picture of herself when she said: "My torso looks like an animated shorthand lesson—completely surrounded by inflated inner tubes."

* * *

Loyal Service

In his regular London letter to *MacLean's Magazine*, Mr. Beverly Baxter, M.P., reporting a visit to Mr. Hore-Belisha's office at the time of the latter's resignation, paid a fine tribute to the personal secretaries of executives, a tribute which might be applied with equal emphasis to the scores of secretaries who give such loyal service to administrators and other executive officers of hospitals:

"She (Mr. Hore-Belisha's secretary) was excited and smiling, but in tears. 'This is rough on you', I said. She shook her head. 'I don't matter', she said. 'It is hard on him after all he has done. And he has been simply magnificent. I was never so proud of him as now'. Some day perhaps a great writer will do justice to women who serve their masters with almost more than the devotion of a wife, who do not share their triumphs, but yet are part of their sorrows; who live only for the man who is neither husband, lover nor brother, but is their world. They ask so little and give so much, and when their idol crashes they say, 'It does not matter about me'."

* * *

British Hospitals Benefit by Income Tax Rebate

One of the arrangements in the Finance Act, recently passed in Great Britain, is that hospitals may recover from the inland revenue amounts already paid by subscribers or donors in income tax and may then credit this to the subscription. For instance, if the subscriber makes an annual subscription of £1 to the hospital, the hospital may recover from inland revenue the sum of 10s. 9d. If the annual subscription amounts to £100, the hospital may recover from the government £53 16s. 11d, thus crediting the subscriber with a donation of £153 16s. 11d. After the 5th of April of this year, the standard rate of income tax is to go up and the donor of £100 under this arrangement would then be credited with £160.

* * *

H.S.A. Has Over 2,000,000 Members

Recent statement of the Hospital Savings Association which covers the greater London area, shows an enrollment of 2,220,653 regular weekly wage-earning contributors. While the income of the Association for 1939 has not yet been announced, its income for 1938 was £1,154,810.

The Round Table Forum

17. Should the Hospitals Hold Fire Drill?

A. K. Haywood, M.D., Superintendent, Vancouver General Hospital, Vancouver, B.C.

IT is not practical to hold fire drills where patients are located, but most important to hold regular drills in employees' quarters, nurses' residences, etc.

Nurses and employees should receive adequate instruction as to their duties in case of fire, especially in the use of fire extinguishers. Fire regulations should be prominently displayed and every employee should be familiar with his or her duties.

Fire fighting equipment should be inspected regularly and kept in perfect condition.

Regular fire inspection by the local authorities should be compulsory, and any criticisms promptly attended to.

* * *

A. J. Chopin, Esq., Superintendent, St. Mary's Hospital, Montreal, P.Q.

Fire drill should be held in the hospital at least once a week, and all male help who can be spared from their duties should be compelled to answer the alarm signals. The enforcement of fire drill rules should be just as meticulously observed as any other regulations drawn up for efficient nursing care and treatment of patients, for their own and the institution's protection from ordinary hospital hazards.

Because the modern hospital is well insured and allegedly fireproof, it must not be assumed that the patient is not exposed to risk, nor that the directors or trustees are ipso facto exonerated from blame or liability.

In St. Mary's Hospital, fire drill is held once a week. It is so arranged that from 20 to 30 of the male staff can be concentrated in any part of the building within a minute to a minute and a half, without disturbing the nursing service or alarming the patients.

* * *

S. R. D. Hewitt, M.D., Superintendent, Saint John General Hospital, Saint John, N.B.

This pre-supposes—

(a) Adequate fire-fighting equipment; i.e.
  (1) Properly placed fire hose of sufficient length, and
  (2) Hose tested at regular intervals to ensure its continued fitness for the purpose.

(b) Fire extinguishers, suitable in type, number and distribution.

(c) Adequate instructions in case of fire, familiar to all staff, particularly heads of departments.

Note: In large hospitals where sub-staff may change frequently, it is not easy to keep them informed.

(d) An organized fire department, with chief engineer as fire chief.

(e) Suitably placed and sufficient stretchers—simple, efficient type, with poles of ½ or ¾" pipe, and elbows at the ends which permit the fingers to slip under the pipe. The two poles connected, of course, with sufficiently heavy sail canvas so that the whole can be rolled up and kept in a convenient place, preferably alongside the hose or fire extinguishers.

Having covered the basic essentials dealing with fire, then it becomes a matter of the frequency of fire drill. This is a debatable question, and depends to some extent on the type of building, although this is open to question. In the older buildings, particularly susceptible to fires, I would feel that fire drill once a month would not be too frequent. In the more modern fire-proof buildings I feel that fire drill at less frequent intervals would be suitable, although that, again, is open to discussion.

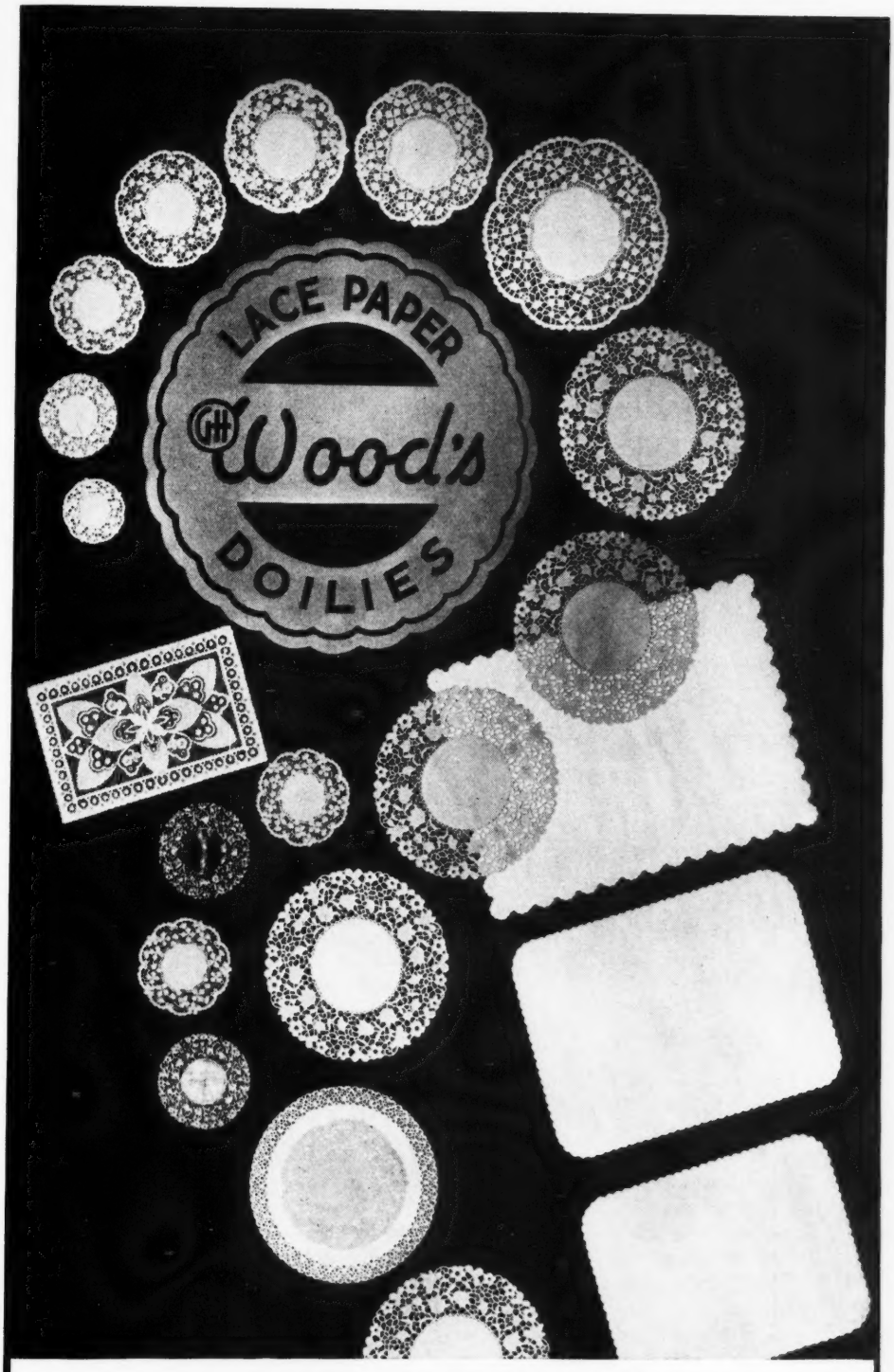
What is particularly important is that, at reasonably frequent intervals, the heads of departments acquaint their staffs with the contents of the House Order relating to procedure in case of fire, and that all staffs be made acquainted with how to use a fire extinguisher properly. This also can be done by the chief engineer in association with the chief of the Fire Department, whose co-operation in arranging the set-up and other important matters is highly desirable, as he is the one who will take charge immediately on arrival.

Question for Next Month:

Should the hospital collect the fee of the special nurse?

Dr. Fred W. Routley Completes Strenuous Tour

Dr. F. W. Routley, National Commissioner of the Canadian Red Cross Society and first president of the Canadian Hospital Council, has returned to Canada after several months of strenuous work in Great Britain and on the continent. In view of the important part being undertaken by the Red Cross in war activities, it was deemed advisable early in the autumn that Dr. Routley should go to London and take personal charge of preparations being made there for Canadian Red Cross work. While in England, Dr. Routley completed arrangements for the setting up of the 600-bed First Division hospital being erected on Viscount Astor's estate at Taplow. This is to be a very fine hut-type hospital, built of brick and reinforced concrete with steel and asbestos roofs. Dr. Routley also visited the front line area in France, where the Canadian Red Cross Society has been accumulating considerable supplies, and went on to Switzerland where he conferred with several international Red Cross organizations with respect to the care of refugees and the homeless in devastated areas. Dr. Routley was accompanied by Mrs. Routley on the trip.



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BRANCHES COAST TO COAST

View of Asa S. Bacon Library, A.H.A., showing package library stacks.

Asa S. Bacon Library Dedicated

The Asa S. Bacon reference library at the headquarters building of the American Hospital Association at 18 East Division St., Chicago, was formerly dedicated at a very pleasant ceremony on February the 12th. Representatives were present from all parts of the United States and from Canada. Some years ago the American Hospital Association purchased this fine building formerly utilized by a private school and the large gymnasium was converted into a library to house the fine collection of hospital literature then being amassed by the American Conference on Hospital Service.

The library has now become the largest library on hospital topics in the world and a few months ago the room was completely renovated and rearranged to meet the increasing demands on its space and facilities. More than 4,500 package libraries are sent out annually.

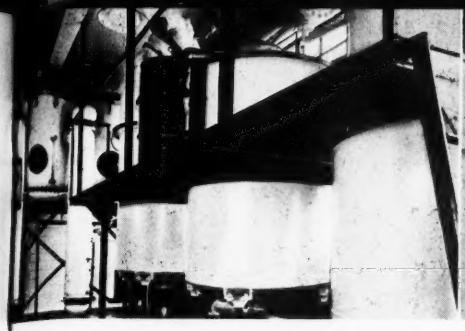
It was particularly appropriate that the board of trustees should decide to name the library in honour of Mr. Asa S. Bacon, the well-known superintendent of the Presbyterian Hospital in Chicago with which institution he has been connected for forty years. Mr. Bacon has been the treasurer of the Association for a third of a century, interrupting this long term of office only to become president in 1923. Mr. Bacon was largely responsible for the building up of the present library and had more to do with the purchase of the present building and the clearance of the mortgage than any other individual. Younger members of the Association have no knowledge of the courage shown by Mr. Bacon and his associates in undertaking the financing of this purchase. At the height of the depression when banks and mortgage companies were collapsing on every hand, the investment of the Association in this building was only saved by the efforts of a small group who floated the bond issues and pledged their own resources to meet repeated calls.

Mr. Bacon has been credited with originating the central food service plan and the central linen supply. He helped develop the first electric signal system for hospitals; he invented a special window to prevent escape or suicide, one of the first adjustable bedside tables, a safety automatic lock for laundry extractors, clamps and other clinical equipment. Not one of his many inventions has ever been patented.

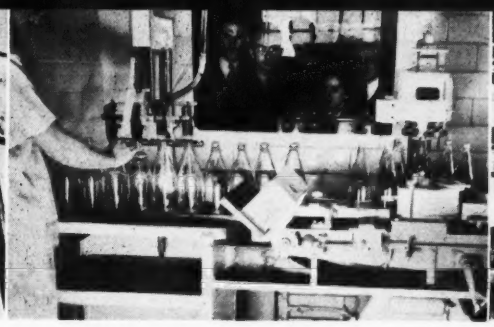
President Fred G. Carter presided at this dedication ceremony and Msgr. Maurice F. Griffin delivered the dedicatory address. He rightly asserted that "many hospitals throughout the country have been bettered and improved because of his kindly personal advice and assistance". In his reply, Mr. Bacon emphasized that he was only accepting this honor insofar as it really was a recognition of the work of the large group of pioneers who laboured so faithfully to build up this association. He pointed out that only twelve of those who were members when he took over the treasurership in 1906 are still living, but it is worthy of note that, of these, five are still in active work. The 1906 membership of 224 contrasts notably with the present membership of 4,781.

Two Ontario Hospitals Benefit by Bequests

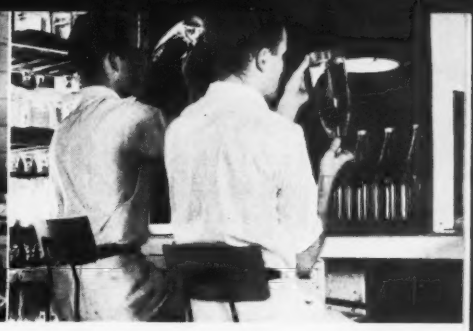
The Hospital for Sick Children, Toronto, and the Alexandra Marine and General Hospital, Goderich, each received a bequest of $5,000 under the will of the late Alexander Purdon of Exeter, Ontario.



1. The equipment for the preparation of litre solutions. These tanks are carefully sterilized with live steam as soon as each lot is completed.



2. Air in the litre solution filling room is kept constantly pure by filtration through the oil film.



3. Containers are all inspected individually to discover the presence of any foreign matter.

ABBOTT INTRAVENOUS SOLUTIONS

In litre containers

AFTER extensive investigation and research, the Abbott Laboratories offer the medical profession solutions of the highest standard of quality. This achievement of the Abbott Research Staff now enables hospitals to free themselves of the heavy burden and responsibilities connected with the preparation of bulky intravenous solutions.

Abbott Intravenous Solutions are guaranteed to be STERILE, STABLE and SAFE. They are prepared from chemicals of the highest quality and from chemically pure water. Moreover, they are altogether free from all impurities, including pyrogens.

Representative samples from each manufactured lot of Abbott Intravenous Solutions are tested for sterility by the same critical test which the Government prescribes for biological products. Abbott Solutions are very low in latent acidity and contain no buffers. Preservatives are not used.

Litre Containers

Intravenous solutions are furnished in the Abbott Container, a bottle specially designed to resist high steam pressure sterilization. Its outer protective seal gives positive assurance of sterility. The inner cap is easily removed by the fingers, without danger of contaminating the lip of the bottles. When the cap is removed, there is no inrush of air to carry spores of air-borne bacteria or molds. Moreover, there is no rubber contact with the solution—no "rubber" odor or taste.

New Technique and Equipment

The new and original technique introduced by the Abbott Laboratories has been devised by our Research Staff after several years of experimentation in the largest clinics of this continent. Every detail has been studied in an endeavour to eliminate any loss of time on the part of those who use the Abbott equipment.

Our representative will be very pleased to give a demonstration of the New Abbott Intravenous Solutions and Abbott Equipment.

4. The absence of pyrogenic effect in every lot of Abbott intravenous solutions is demonstrated routinely by intravenous injection of samples of the solutions into rabbits, the rectal temperature of the animal being taken every hour before and after the injections.

5. Following final sterilization, intravenous solutions are again inspected under strong light for foreign particles.

ABBOTT LABORATORIES LIMITED

388 ST. PAUL STREET WEST - - MONTREAL

Ontario Hospital Association News

WOMEN'S HOSPITAL AIDS ASSOCIATION

Province of Ontario, Canada

Association formed 1910
Individual Aid formed 1865

The Junior Hospital League Aid of Chatham General Hospital had a reception and formal opening of the new nursery on February 16th, a project the Aid has been working toward for some time and which is a distinct credit to them. A large silver key was handed to the Superintendent, Miss Priscilla Campbell, during the opening ceremony. Among the contributions given by this Aid to the hospital are electric sterilizers, electric refrigerator, a room furnished in the surgical ward, besides doing the sewing to meet the needs of the nursery, the building and equipping of the new nursery at a cost of $1,500. This Aid represents one of four very energetic hospital Aid groups working for the Chatham General Hospital.

An afternoon tea meeting was held recently at the Women's College Hospital by the Hospital Aid, the occasion being the presentation to the Hospital Board by the Aid of a cheque for $1,452.00, also a cheque from the Cradle Club Hospital Aid for $668.00 which represents proceeds from "January Nite"—a delightful function which was held at the Royal York Hotel, when nearly 3,000 guests paid compliment by their attendance to the work of the various voluntary groups working for the Women's College Hospital, Toronto.

The Hospital Auxiliary to the General Hospital, Hamilton, report much activity, over a thousand dollars being given to the Convalescent Hospital, which is conducted by an Aid group, many thousands of surgical dressings made during the year by the various groups, eighteen complete hand-made layettes given out Christmas morning at the maternity wing. Hundreds of hand-made knitted articles were distributed during the year in the outdoor department. Also sixty-three baskets of food for needy families were given out, besides providing surgical appliances, glasses, insulin syringes, diabetic scales, and special food. This Auxiliary also pays for a trained assistant in the out-door department.

Among the outstanding Hospital Aid groups we have the volunteer workers of the Mount Sinai Hospital, Toronto, who have contributed $6,000 during the past year to the Hospital. A multitude of avenues of service is represented in the great work done by these women. There is no estimating their value.

Besides all the splendid work contributed to the various hospitals by the volunteer workers throughout the province, all have contributed unstintingly to war work as well.

Sairy Gamp Herself

This photograph of a prominent hospital executive was recently received. She is very active in the work of her provincial association, has made frequent contributions to hospital literature and is well known to hospital people in all parts of Canada. Unlike the picture her countenance is most attractive when without this makeup. Who is it? Frankly, we were completely fooled ourselves.

American College of Surgeons to Hold Regional Meeting at Detroit and Ann Arbor

April 1st, 2nd and 3rd have been selected for the regional meeting of the A.C.S. at Detroit, with headquarters at the Hotel Statler. The hospital conference will continue the three days in Detroit, but on the third day, Wednesday, April the 3rd, the scientific and clinical sections will be held at the University Hospital at Ann Arbor. An excellent program for the hospital section is being developed, consisting of papers, panel and round table discussions, demonstrations and group conferences. A number of Canadian speakers are participating on the program.

On Monday, the organization and management of the small hospital will be featured on the program and will be considered from many angles. Monday afternoon will be devoted to general papers and in the evening there will be two large round table conferences.

Tuesday, April the 2nd, starts with a breakfast conference on the requirements for A.C.S. approval. The morning session will be a series of panel discussions, grouped under the general heading, "Preparedness for Emergencies Coming to or Occurring within the Hospital". The afternoon will be devoted to demonstrations in local hospitals and to a conference on graduate training in surgery. In the evening there will be a series of medical motion pictures for hospital personnel.

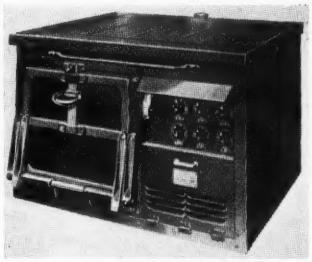
On Wednesday the breakfast conference will be devoted to discussion of training for hospital administration, and the morning will be devoted to ten group conferences covering a number of pertinent problems. Wednesday afternoon will take the form of a consultation round table conference at which authorities on 20 different aspects of hospital work will be present to assist in answering questions.

Reservations should be made well in advance.

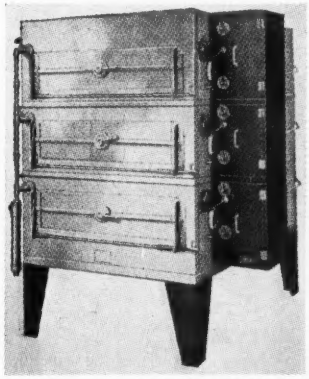
Wrote Benjamin Franklin in 1753 in a note to Sister Elizabeth, matron of Pennsylvania Hospital: "Please to receive the Bearer into the Hospital, to entertain him there till the Physicians have considered his case."

Your Kitchen . . .

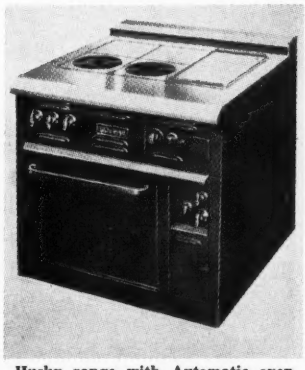
clean and efficient as your operating theatres



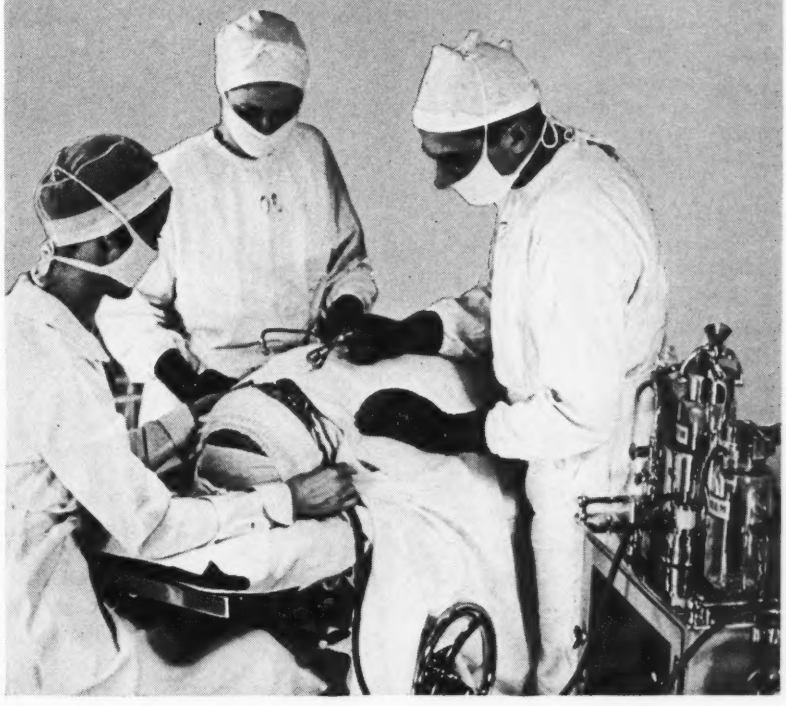
Heavy duty range with unusually large working surface and automatically controlled oven.



Bake oven with individual heat control for each section, remarkably large capacity.



Husky range with Automatic oven and flexible top that can be selected to meet your particular needs.



Attractive, scientifically prepared food is vitally important in the treatment of patients. Your kitchen should be as well-equipped as your operating rooms. Canadian General Electric cooking equipment gives you the benefits of years of electrical research . . . automatic controls that assure consistently perfect results . . . Calrod elements that give the cleanest, fastest electric cookery available. G-E Hotpoint Units give you the utmost in efficient, sanitary cooking. Let a G-E specialist survey your kitchen. He will gladly suggest ways of improving your present set-up. Just call your nearest C-G-E office.

MW-240

GENERAL ELECTRIC

COMMERCIAL COOKING EQUIPMENT

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Refresher Courses in Hospital Social Work and in Public Health

From May 13th-18th next, the School of Nursing of the University of Toronto is offering two Refresher Courses, one on Hospital Social Work, the other, Administrative Problems in Public Health Nursing Practice. The content will include:

I. Hospital Social Work, May 13-16

Lectures

General topic: The practice of Hospital Social Work.

(a) The Principles and Philosophy of Social Case Work.
(b) The Psychology of Social Case Work.
(c) Recent advances in the field of Medical Research.
(d) Trends in Hospital Administration.
(e) Trends in Hospital Social Work.

Round Tables

These will afford opportunity for general discussion more particularly from two points of view:

(a) The Hospital Social Worker and the Patient.
(b) The Hospital Social Worker and Community Relationships.

II. Administrative Problems in Public Health Nursing Practice, May 15-18

Lectures

The general topic from the angle of:

(a) The Health Administrator.
(b) The Public Health Nurse.
(c) The Statistician.

Round Tables

A discussion of the public health nursing Administrator and:

(a) Activities.
(b) Personnel.
(c) Records, Statistics, Budgets.

Plans are underway whereby each of the subjects will be dealt with by those who speak with authority, and all told this week of teaching should hold unusual interest. The cost will be $5.00 for one course and $8.00 for the entire week.

Ford and Kresge Join Hospital Service Plan

Mr. Carl Flath, now Assistant Director of the Michigan Society for Group Hospitalization, informs us that their society has enrolled on a national scale the employees of the Ford Motor Car Company and the S. S. Kresge Company. The Ford enrollment is the largest single group to have yet entered any non-profit plan. In all more than 160,000 employees are affected by the decision of these two country-wide organizations. The thirty Ford plants will be served by 32 non-profit service plans and Kresge with 720 outlets in 28 states, will be served by 42 city and state service plans. Both plans will operate on a payroll deduction basis. This plan and the Michigan Medical Service are working in very close co-operation in the selling of hospital and medical care.

Rev. H. G. Wright to Leave Inverness

Rev. Herbert G. Wright, vice-president of the Canadian Hospital Council, and active in its work since its first meting in 1931, has resigned the pastorate of St. Matthew's United Church in Inverness, Cape Breton.

Mr. Wright's plans for the future are said to be indefinite, but should he leave Nova Scotia it would be a serious loss to the hospital and social welfare movements in that province. Mr. Wright has been president of his provincial association, and is one of the few members who has never missed a meeting since its organization. He has also been president of the Maritime Conference of the United Church, and has been very active in many of its committees and activities. He will be particulalry missed in Inverness, where his work with the miners has resulted in a very definite improvement in their social, economic and spiritual welfare. In association with the Rev. Mr. MacLean, he was largely responsible for the building of the Inverness County Memorial Hospital and for its rebuilding after the fire this last year.

A comfortable arrangement for the Board Room at the Children's Hospital in Denver, Colorado.

Wooden tracks on the lawn at St. Luke's Hospital, San Francisco, to permit patients to be wheeled out on the lawn while the ground is still soggy.

Photographs by the Editor.

PRICE TRENDS (On basis 1926=100)

	January, 1939	December, 1939	January, 1940
Building and Construction Materials	87.3	94.2	93.9
Cost of Living	83.3	85.3	85.1
Consumer' Goods (Wholesale)	74.4	81.3	82.2

Coming Conventions

April 3-5—Sectional Meeting, American College of Surgeons, Hotel Statler, Detroit.

May 13-16—Refresher Course on Hospital Social Work, School of Nursing, University of Toronto.

June 17-21—Catholic Hospital Association of the United States and Canada, St. Louis, Mo.

June—Nova Scotia and Prince Edward Island Hospital Association.

June—New Brunswick Hospital Association.

Aug. 28 - Sept. 11 — Eighth Annual Institute for Hospital Administrators, Chicago.

Sept. 1-15—New England Institute of Hospital Administration, Harvard Medical School, Boston, Mass.

Sept. 16-20—American Hospital Association, Boston, Mass.

Oct. 8-9—Ontario Conference of the Catholic Hospital Association, St. Michael's Hospital, Toronto.

Oct. 9-11—Ontario Hospital Association, Royal York Hotel, Toronto.

October—Manitoba Hospital Association.

October—Saskatchewan Hospital Association.

October—Alberta Hospital Association.

October—British Columbia Hospitals Association.

Oct. 28-Nov. 9—Course in Hospital Administration for Nurses, School of Nursing, University of Toronto.

Construction

Residents of Oliver, B.C., have voted in favour of a $30,000 20-room hospital. They plan to raise a third of the money in Oliver, a third from the provincial government in the form of a grant, and the remainder from a religious order which will take over the hospital.

* * *

Work on St. Thomas Mental Hospital, Ontario, has to date cost $5,985,000. Although pre-war estimates for cost on completion put the figure at $11,000,000, it was revealed in the Ontario Legislature recently that cost on completion would be $6,200,000.

Reopening of Hospital at Lillooet, B.C., Considered

The hospital society at Lillooet, British Columbia, at its annual meeting voted in favour of re-opening the hospital. A mass meeting of citizens will be held to consider the matter. The society is reported to have received an intimation that a religious order would take over the hospital.

Book Reviews

COMMON PROCEDURES IN THE PRACTICE OF PAEDIATRICS. By Alan Brown, M.D., Physician-in-Chief, Hospital for Sick Children, Toronto, Professor of Paediatrics, University of Toronto, and Frederick F. Tisdall, M.D., Associate Physician, Hospital for Sick Children, Associate Professor of Paediatrics, University of Toronto. 3rd edition. 314 pages Price $5.00. McClelland and Stewart, Limited. Toronto, 1939.

The third edition of this popular textbook by these well-known authorities in paediatrics incorporates the latest advances in paediatric procedures into a work that has already received widespread recognition. There are chapters on the physical examination, feeding and foods, undernourished and obese children, behaviour problems, intelligence tests, parenteral feeding, therapeutic and diagnostic procedures, the use of biological products, laboratory procedures, diagnostic difficulties and a section on drugs. This work can be strongly recommended for the use of physicians, interns and nurses.

* * *

MASTERS OF THEIR OWN DESTINY. M. M. Coady, Director of Extension of St. Francis Xavier University, Antigonish, N.S. Pp. 170, with map. Price $1.00. Harper and Brothers, New York City.

This is the story of the remarkable experiment in adult education and in economic co-operation which has been conducted in eastern Nova Scotia. Written by its dynamic guiding spirit, Father Coady, this is a graphic story of those successful efforts to raise the cultural and economic status of the common people, which have been a focus of interest to the entire continent. In succession Father Coady tells of the spread of adult education through village discussion clubs, forums, and libraries, of the development of consumers' co-operatives, of the setting up of credit unions and their spread throughout the country, and of co-operative marketing movements. Father Tompkins' housing plan at Reserve Mines, C.B., the hospitalization benefits of the St. Andrew's co-operative and dozens of other successful developments are fully reviewed. This fine example of community leadership should prove a real stimulus to all who read of it.

* * *

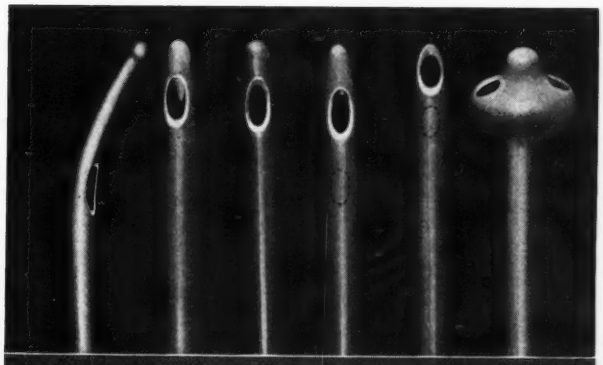
APPLIED MICROBIOLOGY AND IMMUNOLOGY FOR NURSES. By Charles F. Bolduan, M.D., Director, Bureau of Health Education, New York, and Nils William Bolduan, M.D., Children's Medical Service, Bellevue Hospital, New York. 8th ed. revised. 280 pp., illustrated. Price $2.75. W. B. Saunders Company, Philadelphia and London. McAinsh & Co. Limited, Toronto. 1940.

The authors have expanded this eighth edition in accordance with the "Curriculum Guide for Schools of Nursing", published by the National League of Nursing Education (U.S.A.). The wider scope of the material is indicated in the change from the old title of the volume, "Applied Bacteriology and Immunology for Nurses" to the present one. A syllabus of practical laboratory exercises has also been added.

Specialized Hospital Equipment by

DAVOL

1



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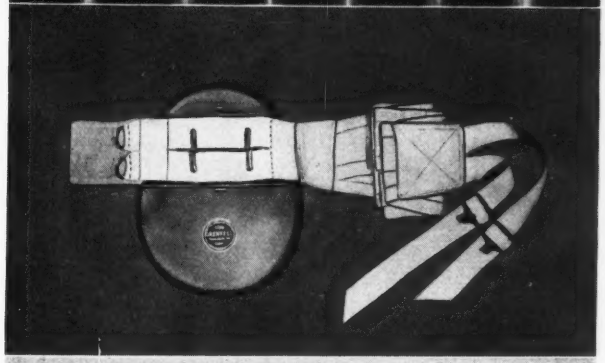

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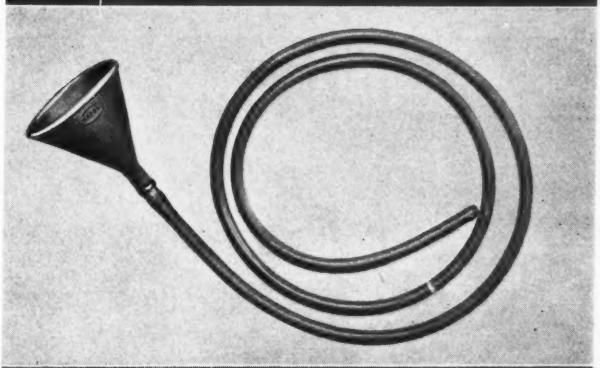

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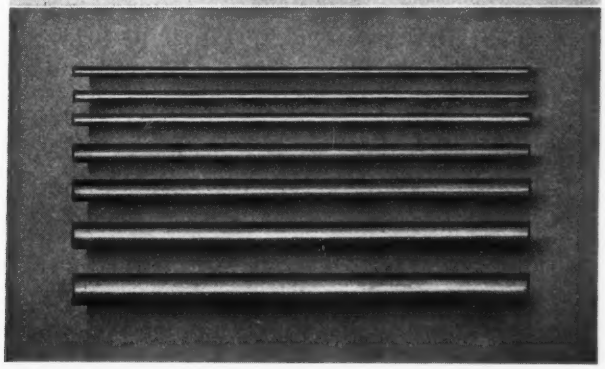


1 CATHETERS

Coude, solid olivary tip, one eye.
French scale 12 to 22;
Female, French scale 14 to 18.

Solid tip, depressed eye.
French scale 8 to 30.

Stilette tip, one eye.
French scale 8 to 30.

Robinson-style, stillette tip,
two eyes.
French scale 8 to 30.

Whistle-tip-style, one eye.
French scale 14 to 30.

Pezzer, mushroom-tip-style,
two eyes.
French scale 12 to 36.

2 COLOSTOMY OUTFITS

Grenfell Pattern.
Supplied with two pouches.

No. 1395 3½″ opening
No. 1315 2½″ opening

3 STOMACH TUBES

Open tip, one eye, 60″ long,
with funnel.

No. 710 22 French scale, child's
No. 711 28 French scale, small
No. 712 30 French scale, medium
No. 713 32 French scale, large

4 PENROSE DRAINAGE TUBING

Latex—36″ long.

No.	Diam.
9787	¼″
9788	5/16″
9789	⅜″
9790	½″
9791	⅝″
9792	¾″
9793	⅞″
9794	1″

DAVOL RUBBER COMPANY, PROVIDENCE, RHODE ISLAND

Davol merchandise is distributed in Canada through the wholesale Surgical Supply Houses by Seiberling Rubber Co., of Canada, Ltd.

THE MERCK INDEX. 5th edition, 1060 pp. Illustrated with formulae, diagrams and charts. $3.50. Merck and Co. Ltd, Montreal and Toronto. 1940.

This is described as "an encyclopedia for the chemist, pharmacist, physician, dentist and veterinarian". It contains a useful scientific description of the physical, chemical and medicinal properties of a wide range of chemicals and drugs. In addition it contains more than 4,500 chemical and clinico-chemical reactions, tests and reagents. Much useful laboratory information is also presented. This useful work could well be included in the hospital library.

* * *

A WORKBOOK OF DRUGS AND SOLUTIONS. By Luella C. Smith, B.S., R.N., Instructor in Science, Methodist Hospital, Indianapolis, Indiana. pp. 99 (loose-leaf). Price $1.35. C. V. Mosby Company, St. Louis. McAinsh & Co. Limited, Toronto, Canada.

This well set up workbook was planned for a nurses' course in drugs varying in length from twenty to thirty hours, and is intended to be used with standard text or reference books. It covers the essentials of the course, presents a good many practical exercises and would be of particular assistance in a review of the course. Its weakness for use in this country is that it refers to the U.S.P. only.

Another Mammoth Gift from Lord Nuffield

The latest benefaction of Lord Nuffield has been the donation of a million shares of Morris Motor Limited, valued at £1,250,000, to form the nucleus of a central hospital fund for use in the English provinces. This gift, which it is hoped will stimulate further gifts on the part of other donors, will be utilized to aid the voluntary hospitals throughout the country which have found their ordinary sources of revenue rapidly dwindling. The gift is in accordance with the recommendations of the Sankey Commission on Voluntary Hospitals.

Appointments and Resignations

Dr. Frank E. Earle, who has been Medical Superintendent of the Ottawa Protestant Children's Hospital, has resigned to take up private practice, and will be succeeded by D. R. Glen Bell, of Queen's University.

* * *

Dr. W. E. Bryans, medical superintendent of the Galt Hospital, Lethbridge, Alberta, for the past fifteen years, has resigned. Dr. K. I. Murray will succeed him.

* * *

Miss Margaret Mackenzie, who for ten years has been chairman of the Sarnia General Hospital Commission, has retired. Mr. W. D. Ferguson will succeed her.

* * *

Dr. N. J. Minnish, formerly of Ninette Sanitarium, has been appointed superintendent of the Dynevor Tuberculosis Hospital for Indians, just north of Selkirk, Manitoba. Dr. W. H. G. Gibbs, who served as medical superintendent for the past fifteen years, will act as consultant physician. Miss M. Goldsmith is the new matron.

Small Photo-Roentgen Films Reduce Cost

A relatively inexpensive method of applying x-ray examinations of the chest to large groups of people was reported at the Atlanta meeting of the Radiological Society of North America. It has been found that 4″ x 5″ photographs of the fluorescent image is small enough to make a real economy in use, particularly for large numbers in examinations, yet large enough to be readily interpreted without enlargement, or at least no greater enlargement than that provided with a simple reading glass. Special equipment has been developed by the General Electric X-Ray Corporation for this work. The machine should permit exposures of from 20 to 80 milliampere-seconds at from 60 to 80 kilovolts, and it is recommended that the tube-screen distance be from 50 to 125 centimeters to produce as little distortion as possible. The fluorescent screen used is nearly 7 times as fast as the regular screen and the F.1.5 lens is mounted in a tunnel with the screen at the opposite end so that both can be moved up and down to obtain the proper level. In checking up its efficiency in some 1,610 cases with the regular 14″ x 17″ films, only 7 out of 271 active lesions were missed, an error of 2.6 per cent. The cost was estimated to be about 1/10 of that for regular radiographs. The method is said to be less expensive and easier to handle than sensitized paper and more accurate than fluoroscopy alone. The 4″ x 5″ film has some definite advantages over the still smaller 35 mm. microfilm.

Used X-Ray Film Wanted

Many hospitals throughout the country have in storage x-ray film which is no longer useful for purposes of record. This film can now be disposed of to advantage to the Progress Smelting & Refining Co., 42 Mill St., Toronto.

This company claims to be the only organization in Canada engaged in re-claiming the silver from x-ray film and salvaging the cellulose. Quotations on discarded film will be gladly submitted on request.

Chemical Problems of Laundering

(Continued from page 60)

rinse, may be different for each part of the process.

Being desirous, therefore, of investigating the effect of a fairly wide range of pH in the washing process and for other reasons, we have decided to begin a series of plant studies on the efficiencies of various formulae, using the three silicate builders and studying these separately. The choice of this type of alkali was based on a very considerable knowledge of previous work which has been carried out on the various laundry alkalis.

We began by trying out a number of formulae, using a built soap solution, using two separate solutions of soap and alkali and making the additions in various ways, *e.g.*, alkali only in break, soap only in break, soap + alkali in break, all the alkali in the break + soap followed by soap in the subsequent suds bath, the use of a wetting-out agent with alkali in the break and so on.

Three formulae out of the lot gave

Canada's Most Modern Hospitals Depend Upon FRIGIDAIRE

Frigidaire-equipped Human Blood Bank installed in the Toronto Western Hospital. Donated blood for transfusions, properly classified, is automatically preserved until needed, at the required temperatures between 34 and 38 degrees Fahrenheit.

Nowhere is the dependability of Frigidaire Electric Refrigeration more amply demonstrated than in the large number of installations in Canada's finest hospitals. Many of these installations are performing unique refrigeration services. All are doing their jobs more dependably than old-style systems and at important savings in time and money.

Get the Facts for Your Board

The outstanding services Frigidaire performs in the modern hospital—the way it quickly pays for itself and goes on saving money year after year—can have a highly important bearing on the operation of YOUR hospital. The facts are waiting for you. Simply sign and mail the coupon—today!

★ Services Frigidaire Performs in the Hospital

General food preservation ★ Ice cream ★ Frozen foods Water cooling for drinking and X-ray purposes ★ Preservation of biologicals and specimens ★ Ice freezing and storage Mortuary cabinets ★ Garbage storage.

FULL INFORMATION WITHOUT OBLIGATION

FRIGIDAIRE DIVISION, K-3
General Motors Sales Corporation,
LEASIDE, ONTARIO.

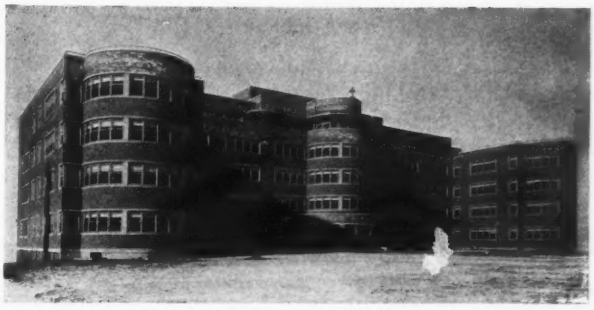
Please send information on Frigidaire for the hospital.

Name .....

Address .....

City..... Prov.....

FRIGIDAIRE IS MADE ONLY BY GENERAL MOTORS



Our Lady of Mercy Hospital, Toronto

HEES WINDOW SHADES

have been selected for this fine new hospital

IN the hospital, the window is one of the most important features of the building. In private and public patients' rooms, the effect of well chosen colour at the window is beneficial to both patients and staff. The impression upon those entering either offices or hospital rooms is that of cheery comfort and relaxation.

We have developed a range of more than twenty beautiful colours, including pastel tints and deeper tones that are a decorative feature in themselves—we will gladly send you upon request color samples and illustrated folder of Monarch Linen Tint Window Shades.

HEESHADES ARE RELIABLE—they are made in Canada by the oldest, largest and most modern window equipment factory in the land.

Sold by leading housefurnishings stores and interior decorators.

Manufactured and Guaranteed by

GEO. H. HEES SON & COMPANY Limited

TORONTO **MONTREAL**

Manufacturers of the famous

HEES VENETIAN BLINDS

indications of promise. These are given in Table II as (a), (b) and (c).

The detergent efficiency obtained on standardly soiled test pieces were in the order given. We are continuing our investigation of this problem, and possibly should not have mentioned the results of a partially completed research. However, you may be interested to know something of the type of plant scale research that we are doing at Ottawa.

There is one thing that has come out of the work—that is a fairly short formula which we have been using for the past two months and which has given very good results. We are operating it at present, using commercial sodium orthosilicate as builder, and intend to try it out on sodium sesquisilicate, sodium metasilicate and other alkaline soap builders.

The formula as used with sodium orthosilicate is given in Table III.

Detergency

Various forces come into play in releasing a film of oil from a textile fibre under the influence of soap solution. Initially, the film of oil adheres to the fibre held there by certain forces which tend to hinder its removal. There is a force acting between the oil and water which tends to keep the surface of the oil-film flat, a force between the water and the fibre, and finally a force between the fibre and the oil film itself. The net result is that the oil film adheres tenaciously, provided that there is no detergent in the water with which it is in contact.

If a little soap is added to the water, there is a rather startling change in the distribution of the above forces. The force of attraction between the solution and the oil, which was previously very small, becomes considerable; and there is also an increase in the attraction between the water and the fibre. This results in a sharp decrease in the angle of contact of the oil with the fibre and finally, owing to a still further decrease in the force of interfacial tension existing between the oil and water and between the oil and fibre, the oil drop takes on an almost spherical shape, in which form it can be readily removed by mechanical action.

Cases of Damage

Some interesting types of damage have been encountered during the year. One of these was slippage in the sleeves of a viscose rayon shirting-fabric. It is of interest to note that this defect always shows up in those portions of the shirt which are subjected to friction or abrasion in use. The trouble occurs chiefly in fabrics in which both warp and weft yarns are composed of rayon.

Another defect arises as the result of poor dye penetration in cotton goods. The damage usually appears at the seams—to give whitish lines at the seams of the dyed garments.

The reason for the trouble is quite apparent when the unravelled portion of the weave shows quite clearly that the weft yarns have not taken the dye in the portions in contact with the overlying warp yarns.

Good examples of corrosive damage arising from the use of a water-repellent finish containing aluminum sulphate have been met. These emphasize the necessity of submitting such products for test before putting them into use in laundries.

The Hospital of Tomorrow

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sumption can be reduced very considerably and the general lighting effect made more pleasing by studies along these lines.

Ultra-Violet Radiation

Another development which one cannot afford to ignore is the use of ultra violet lamps to destroy bacteria and thus prevent the spread of infection. A paper by Dr. Chant Robertson of the Hospital for Sick Children on this subject, given at the Toronto meeting of the A.H.A. will well repay study.

Infra-Red Radiation

The use of infra-red lamps for providing the necessary heat to bake enamel on metal has lately been reported by the Westinghouse Company. This development opens up several possibilities in hospital construction and operation.

For example, our present methods of providing elaborate and expensive steam boilers and distributing lines all over hospitals for sterilizing alone has never appealed to me as the most efficient and economical method of doing that kind of work.

Either one or both of these new types of lamp may open up new avenues for research along this line, because, if we could eliminate the need for high pressure steam boilers, many small hospitals, and also many not so small, could be saved a lot of expense and a lot of grief.

Conclusion

Having studied the various essential items in our "Canadian hospital requirements index", we have still to correlate them to our particular job, which, as we suggested at the beginning, must, from now on, be as nearly as possible a hospital building distinguished by the following almost impossible association of qualities:

Economically planned.

Economically constructed.

Economically equipped.

Economical in administration.

Comfortable to live and work in.

Conducive in itself to the maximum wellbeing of patients and staff.

Operated in toto as a contribution towards the solution of the problem of the care of the community's sick and not as a self-contained enterprise without any regard to the possibilities of communal co-operative effort.

It is possibly just as well for the writer to admit that he knows of only one example in his professional practice where anything like the abovementioned program of analysis was undertaken; that was in connection with the development of hog raising stations, which had nothing to do with hospitals, in fact, not even with human beings.

However, in these studies it has been shown that methods of housing, of feeding, and of offsetting our climatic disadvantages are possible for hogs which, if applied to the present industry as a whole, would mean a saving of about sixteen million dollars a year to Canadian hog breeders.

This can be used as an illustration of what may be expected when we give just as much thought to what our projected Canadian hospital building is supposed to do and forget about what somebody else may or may not have done under entirely different circumstances.

The Romance of Radium

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To Mr. LaBine cobalt meant silver, a carry-over from the days of the silver rush to cobalt. We will pass over the trying period of exploration, but, one day, looking for silver, he picked up, on the shore of the Great Bear Lake, a piece of pitchblende. Looking further he found a vein of the ore. It was unusually rich, three times richer than the Congo ore and ten times richer than the American ore.

Here was the precious ore but two problems remained. It had to be taken from its Arctic home and the refining process had to be developed.

The Mackenzie River meanders north from Waterways, Alberta, but it is open only a few weks in the summer. To get the ore out and the supplies in was indeed a problem, but aeroplane, dog, water and rail transportation was arranged and today a Canadian company is mining Pitchblende in the Arctic Circle and refining it in Port Hope, Ontario.

The Refining Process

Since it requires 500 tons of ore to produce one gram of radium, the question may be asked why does Eldorado not refine at the mines instead of shipping the concentrate 4,000 miles to Port Hope?

In the first place, the 500 tons of the ore are sorted and screened until they are reduced to 10 tons of pitchblende. This sorting is done at the mine and only this concentrate is shipped to Port Hope. Moreover, to treat a ton of pitchblende concentrate requires seven tons of chemical. It is more economical to ship 10 tons of concentrate to the refinery than 70 tons of chemical to the mines, to say nothing of the greater ease in obtaining the large quantity of water and other services which are required.

The refining problem remained. The Curies had given the extraction technique to the world, but the Belgians had perfected its use on an industrial scale. The Eldorado Gold Mines Ltd., turned to them for help, but no help was forthcoming. It was then that Marcel Pochon, a pupil of the Curies, read of the Canadian difficulty. He himself had devised a new and cheaper method of extracting radium. Pochon came to Canada with his equipment.

To destroy competition the Belgians reduced the price from $70,000 a gram to $25,000. This was a severe blow to the Canadian industry but Canada continues to produce and increase the supply. More and more hospitals are extending radium and deep therapy treatments to patients in their respective localities. The great problem now is to get the cancer patient to the hospital in time.

Address to the Gananoque Rotary Club given by R. Fraser Armstrong, B.Sc., Superintendent, Kingston General Hospital, Kingston, Ontario, January 15, 1940.

Mont-Joli Sanatorium

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tors, stairways and recreation rooms. It also allows for segregation of patients by sex in the right and left wings and the separation of kitchen quarters, dining quarters for personnel and common rooms, chapel and theatre.

Private, semi-private and four-bed ward accommodation is provided. The sanatorium has a capacity of 300 beds, but is actually equipped at present for 265 patients. Living quarters, including recreation rooms and balconies for the hospital personnel, who number 80, are on the fourth and fifth floor.

One of the most important problems to be considered by builders in Canada is the expansion and contraction of materials used in construction owing to climatic extremes. St. Georges Sanatorium, which appears to be a perfect unit with a 440 feet front, is composed in reality of three buildings side by side to allow for this. Each section is a homogeneous structure: the walls stand side by side and the points of contact are concealed, outside, by an edge of copper and, inside by coincidence wtih room divisions.

Heating is by steam. The sash windows are double glazed. The noise problem has been met by the use of gypsum block in the partitions and acoustical treatment for ceilings in corridors and reception rooms. Water is supplied by the local aqueduct, but the sanatorium has two 13,000 gallon reservoirs for emergency service should any interruption of this local service occur.

The total cost of the Sanatorium is $860,000; $620,000 for construction and $240,000 for furnishings and equipment. The architect was Lucien Mainguy, D.S.A., of Quebec.